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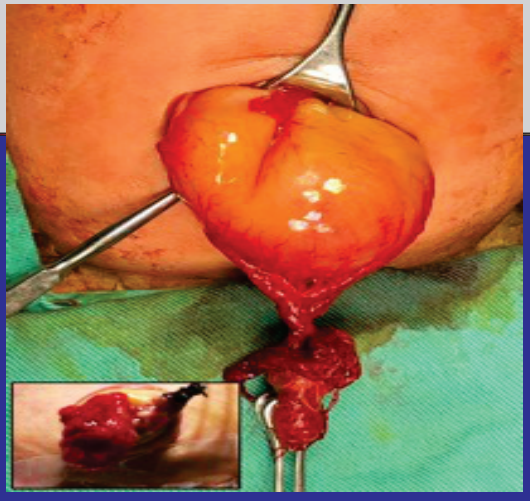

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SCIENTIFIC ARTICLE

Performance measures and quality standards in lower gastrointestinal endoscopy in Sri Lanka: a prospective observational study

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Keywords: Endoscopy, Colonoscopy, Sigmoidoscopy, Quality, Standards

Abstract

Introduction

Lower gastrointestinal endoscopy(LGIE) is the gold standard diagnostic tool in evaluating large bowel mucosal pathology. Guidelines have been developed to ensure the quality of the procedure with regard to patient safety and diagnostic accuracy. There is lack of data regarding quality of LGIE in Sri Lanka.

Objective

Aim of this study is to assess the quality of LIGE performed in a tertiary care center in Sri Lanka by comparison with the standard quality indicators.

Material and Methods

A prospective observational study was carried out in a tertiary care centre in Sri Lanka. Data of 210 patients who underwent LGIE by four experienced endoscopists (Both Colonoscopy and Flexible sigmoidoscopy) were recorded. Variables assessed were selected from quality indicators given in the guidelines of American Society of Gastroenterologists and European Society of Gastrointestinal Endoscopy. Data was compared with pre, intra and post procedure standard quality targets using the one sample proportion test to evaluate the hypothesis related to the indicators and calculating the p values

Results

All pre-procedure measures and 6 out of 7 intra procedure measures did not reach the target goals. Although majority of post-procedure targets were achieved, overall quality of the endoscopy in relation to all 3 categories falls below the recommended minimum standards.

Conclusion

The quality of LGIE with-regard to all the aspects falls below the expected standards indicating poor quality of LGIE performed in a Sri Lankan tertiary care setting. Majority of the failures are due to lack of awareness and training rather than lack of resources. Using a standard protocol based pro-forma, improved education of endoscopy staff on guidelines and maintaining an electronic database will increase the quality of LGIE.

Introduction

Despite advancement of radiological imaging, lower gastrointestinal endoscopy (LGIE) remains the 'gold standard' investigation for assessment of large bowel pathology. However lower gastrointestinal endoscopy is not without its drawbacks which include risk of serious complications such as bowel perforation and low but non-negligible miss rate of colorectal cancers [1]. Several studies have shown that colonoscopy is less effective in preventing deaths due to proximal colon cancer which is likely attributed to quality factors of endoscopy. [2-7].

There is a growing interest to increase quality standards of endoscopic examinations to minimize diagnostic errors, reduce complications and unnecessary health care costs from repeated procedures[8].

Many professional bodies have published recommendations on performance measures for LGI endoscopy . Of these, guidelines developed by the American society of Gastroenterologists (ASGE), American Gastrointestinal Society (AGS) and The European Society of Gastrointestinal Endoscopy (ESGE) with regards to quality assurance are widely accepted. These performance measures are well-defined, reliable, and simple tools which have proven impact on clinical outcomes. They also have susceptibility for improvement, and applicability to all levels of endoscopy services.

Standard guidelines assess quality standards and performance measures belonging to several key domains, pre-procedure measures, completeness of the procedure, performance

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measures for diagnostic and therapeutic accuracy, complications and post procedure follow-up.

Adherence to guidelines help to minimize diagnostic errors and reduce associated morbidity and mortality [9,10]. In addition, these guidelines have focused on the accuracy of endoscopic report documentation and ESGE has developed the minimal standard terminology for gastrointestinal endoscopy (MST)[11]. Recommendations for image documentation have also been introduced recently.

Currently Sri Lanka lacks a national endoscopy data base. We could not find any studies that has evaluated the quality of performed LGIE in Sri Lankan context. Principle objective of this study was to assess the quality of the lower GI endoscopy procedures with aim to develop a proforma(checklist) which suits Sri Lankan setting.

Methodology

This is a prospective observational study conducted at a tertiary care centre in Sri Lanka. Ethical clearance was obtained from the ethical review committee of the institution. Patients >16 years, who undergo diagnostic LGIE (Both colonoscopy and flexible sigmoidoscopy) were included in the study after obtaining informed written consent. Patients undergoing LGIE for emergencies and assessment of anastomotic site after rectal surgeries were excluded. Study was carried out over a period of 8 months starting from December 2019. All the data was collected by trained health professionals. All procedures were performed by four experienced endoscopists who have received adequate amount of training and perform more than 150 colonoscopies per a year[12,13]. Endoscopists were aware of a study being conducted, but not the components assessed.

Fourteen components, were chosen from the two guidelines (American Society of Gastroenterologists and European society of gastrointestinal endoscopy) by four specialists attached to the unit, based on relevance and feasibility. Selected components included pre, intra and post procedure variables. Each component has recommended minimum performance target according to the standard guidelines. A pre-tested proforma was used to collect the data. Variables studied were compared with standard performance targets and level of adherence to the standard values were assessed using the one sample proportion test (one sample Z test for proportions) and one sample t test with testing the hypothesis related to the indicators. Statistical analysis was done using SPSS software by obtaining the p values and confidence intervals (one tailed and two tailed) at 5 % significance level with normal approximation method.

Results

A total of 210 procedures were recorded. (colonoscopy=138; sigmoidoscopy=72). Out of 210 patients, 115(54.8%) were males and 95(45.2%) were females. Age range of the study population was between 17 to 82 years. Descriptive analysis of study population is shown in Table 1 and Table 2 shows the indications for the procedures. Quality standards were assessed under 3 categories; pre, intra and post- procedure measures, which are demonstrated in Table 3 to 5.

Table 1. Demography of the study population (N = 210)

Variable	Number	Percentage (%)
Sex		
Male	115	54.8
Female	95	45.2
Age		
17-20 years	6	2.85
20-29years	19	9.05
30-39 years	31	14.7
40-49years	47	22.4
50-59 years	51	24.3
60-69 years	43	20.5
70-79years	8	3.8
80-82 years	5	2.4

Table 2. Indications for the procedures [N=210]

Indication	Number	Percentage (%)
Rectal bleeding	56	26.7
Altered bowel habits	58	27.6
Unexplained Iron deficiency anaemia (Negative upper GI endoscopy)	6	2.8
Unexplained loss of appetite/weight	8	3.8
Surveillance after resection of large bowel malignancy	11	5.2
Surveillance after polyp resection	6	2.8
Surveillance of Inflammatory bowel disease/polyposis coli for malignancy	4	1.9
Chronic abdominal pain or discomfort	61	29.1

Table 03. Comparison of assessed pre-procedure quality indicators and recommended target values

	Pre-procedure indicators				
	Variable	**Performance target**	**Sample proportion**	**P value**	**Lower bound at 95% significance level**
1	Colonoscopy is performed for a standard indication (and documented)	> 80%	0.7095	0.99	0.6579
2	Informed consent is obtained	> 98%	0.7476	1.00	0.6983
3	Pre-procedure history and examination are performed and documented	> 98%	0.8904	1.00	0.8550
4	Risk for adverse events is assessed and documented	>98%	0.4714	1.00	0.4147
5	Sedation plan is documented	>98%	0	—	—
6	Team pause is conducted and documented	>98%	0	—	—

Table 04. Comparison of assessed intra-procedure quality indicators and recommended target values

	Intra-procedure indicators				
	Variable	**Performance target**	**Sample proportion**	**P value**	**Lower bound at 95% significance level**
1	Procedure note documents the quality of preparation	>98%	0.584	1.00	0.5219
2	Doses/Routes of administration of medications are documented	>98%	0.076	1.00	0.0483
3	Bowel preparation is adequate	>90%	0.7523	1.00	0.6984
4	Caecal intubation rate	≥90% ≥95% for screening	0.8809	0.850	0.8377
5	Adenoma detection rate	≥25%	0.3380	0.003	0.2839
6	Withdrawal time - measured	>98%	0	—	—
7	Withdrawal time minimum >6 min (in a negative colonoscopy)	>6 min	2 minutes and 30 seconds (Average)	0.2752	CI (2.337, 2.463)

Table 05. Comparison of assessed post-procedure quality indicators and recommended target values

	Post-procedure Indicators				
	Variable	**Performance target**	**Sample proportion**	**P value**	**Lower bound at 95% significance level**
1	Incidence of perforation	<1:500 <0.002	0 (No perforation)	—	—
2	(i)post-polypectomy significant bleeding	<1%	0 (No significant bleeding)	—	—
	(ii)Frequency in which post-polypectomy bleeding is managed without surgery	≥90%	100%	—	—
3	Appropriate recommendation for timing of repeat colonoscopy is documented and provided	≥90%	0.6476	1.0	0.5896

Informed written consent was obtained in only 74.8%(N=157,) of cases. Although rest of the procedures were performed after obtaining a written consent it was not taken describing all the relevant risks and were not satisfactorily documented. Risk factors for adverse effects such as presence of allergies, being on antiplatelets and anticoagulants assessed and documented in only 47.1%(N=99) cases. Only 71% percent of procedures had a proper indication and in 4% no indication was documented. A team pause was not conducted in any of the cases. Use of sedative drugs were documented in only 7.6%(N=16) cases. Even when documented, medication name, dose and route were not properly written.

In 86% of cases of sigmoidoscopy, the scope negotiated the splenic flexure and caecal intubation rate was 88.3% (recommended >90%). Although equipment for photo documentation was available, it was not used to confirm caecal intubation or to demonstrate the lesions identified. In 65.4% of cases of colonoscopy with failed caecal intubation the scope did not reach at least up to the splenic flexure, of which 15.8% examinations were limited to the sigmoid colon. Poor bowel preparation accounted for majority of procedure failures (53.7%). Pain (34.5%) and anatomical difficulties accounted for rest of the failed procedures.

Proper bowel preparation was achieved only in 75.4% of cases. The median duration of colonoscopy (without biopsy or polypectomy) was 12 min. Only 11.4% of colonoscopies had withdrawal time of >6 minutes. Withdrawal time was not actively measured in any of the cases. None of the procedure documentations included all aspects assessed by LGIE and majority (68%) of documentations included less than 50% of aspects of assessment.

Major complications in terms of bleeding, bowel perforation, cardiopulmonary complications, ICU care or prolonged hospital stay, were not encountered. No deaths were recorded as a direct result of LGIE.

Discussion

This study evaluated the process of LGIE quality with regards to 3-time scales; pre-procedure, intra-procedure, and post procedure.

*Pre-proced*ure quality indicators

In this study, only 70.9% (p=0.99, CI=0.6579;lower bound at 95% significance level) of patients had LGIE for a standard indication which is below the expected standard of 80%. Performing LGIE for a standard indication reduces the patient risk, work-load, financial burden as well as facilitates arriving at a more significant diagnosis [14,15]. This is particularly important for a resource poor setting like Sri Lanka. This fact is further emphasized by findings of another Sri Lankan study by Samarakoon et al which showed compliance with standard indications provided in guidelines enhances maximum utilization of limited resources while maintaining quality and safety of endoscopy[16].

Informed written consent was obtained only in 74.6% of cases (expected in ≥98%, p=1.00, CI-0.6983). In a study in UK involving both patients and medical negligence specialists, showed that 48% of solicitors and 38% of patients expect that patients should be told of even very uncommon risks. In addition all the solicitors and patients stated that patients understanding should be rechecked after the consent[17]. However, our study shows that approximately 25% of patients lacks even a proper written consent. Main reason for this is lack of a proper consent form which include all possible risks and complications. This demonstrates poor concern with regard to ethical and legal aspects of LGIE in Sri Lankan setting.

Proper assessment and documentation of history and examination findings (p=1.00, CI-0.8550) as well as the risk for adverse events (p=1.00, CI-0.4147) fall far below expected targets. ASGE recommends that proper history and directed physical examination is vital to identify abnormalities of major organ systems; history of adverse events related to sedation or anesthesia; medication associated issues such as allergies and use of anti-thrombotic drugs. Although guidelines emphasize the risk assessment of sedation related adverse events by an established method such as ASA score, in this study group this was only carried out for high-risk patient categories such as those with heart disease.

ASGE recommends to conduct a 'Team pause' prior to commencement of any endoscopic procedure; in-order to confirm that the correct patient is undergoing the correct procedure. However, none of the LGIE were proceeded by a team pause.

It is a major failure that none of the pre-procedural quality indicators met the recommended minimum standards. Non-compliance with these criteria shows a major drawback in relation to patient safety and requires immediate attention.

Intra-procedure quality indicators

Intra-procedure measures principally assess the technical aspects of LGIE including completeness of the examination and all therapeutic interventions employed.

Adenoma detection rate (ADR) is a vital quality measure in colonoscopy. Several large scale studies have shown that colonoscopy cohorts followed for up to 3 years after the procedure with late detection of colorectal cancers (CRC) were mainly attributable to missed adenomas [18-19]. A study conducted in the US revealed that higher ADR were associated with lower risks of developing interval and advanced-stage colorectal malignancy. In fact, it showed a 5% reduction in interval colorectal cancer for each 1% increase in ADR. In both genders higher ADR were linked with a decreased risk for colon cancers[20].

Although guidelines do not specifically provide a recommendation regarding ADR for flexible sigmoidoscopy (FS) ; this study also included adenomas detected by FS when calculating ADR. Calculated adenoma detection rate in this study was 33.8% which exceeds the recommended target (p=0.003, CI=0.2839). Since screening colonoscopies are not carried out to detect colorectal cancer in public hospital system in Sri Lanka, we measured ADR in symptomatic patients. Although the achieved value is not an ADR by definition as the patients are symptomatic it can be considered as a fair surrogate measure of adenoma detection. This is the only indicator that met the recommended target out of intra-procedure quality measures.

Caecal intubation rate, which measures completeness of LGIE, is recommended to be ≥90% (with photographic evidence). Failed caecal intubation results in not only increased risks of interval proximal CRCs but higher financial costs, as the examination must be rescheduled [21]. In a German study, Brenner et al. showed that there is a direct association between interval colon cancers and completeness of the previous negative colonoscopy[22]. Our study showed adjusted caecal intubation rate (after excluding procedures with poor bowel preparation and other reasons which hinders advancing the scope due to risk of perforation) of 88.1%(p=0.850) which is close to the expected value but does not meet the required target. Caecal intubation should be documented in writing as well as with photo or video evidence. However, none of the cases in this study were photo or video graphically documented. ESGE recommends to carry out an audit to determine the cause if caecal intubation rate of an endoscopy service is suboptimal .These audits can identify causes of incomplete colonoscopy and assess each endoscopists performance, which in turn provide a valuable feedback to help maintain their technical skills above the minimum required level.

Despite flexible sigmoidoscopy(FS) being widely used; there is lack of standard guidelines to define landmarks to assess completeness of FS. Most widely used end point is reaching the splenic flexure although some endoscopists aim only to reach just beyond sigmoid colon. However, it is mandatory that standards are set in future to assess completeness of FS to ensure their quality.

In this study, quality of bowel preparation was assessed using the Boston Bowel Preparation Scale, where bowel preparation is considered adequate if BBPS score ≥2 in each 3 segments of colon (however for sigmoidoscopy, a value of 2 or more was considered adequate since only the left colon is evaluated)[23]. Only 75.2% (N=158, p=1.00), cases had adequate bowel preparation which is far below the expected rate of 90%. Poor bowel preparation is associated with reduced caecal intubation rate, reduced detection of polyps and increased risk of perforation, apart from substantial economic burden of repeated examinations [2-3].

The probable cause of poor bowel preparation in the study population could be prolonged waiting time between the end of the preparation and the commencement of the procedure. A meta analysis of multiple randomized trails have identified this interval as the most important factor governing the quality of bowel preparation. It has shown that preparation quality is inversely related to the waiting time [24]. Therefore it is necessary to implement measures to increase the quality of bowel preparation in Sri Lankan setting particularly by minimizing the undue waiting time . The above meta-analysis by Kilgore et al.also demonstrated that poor quality due to prolonged waiting time can be overcome by utilizing split dose regimen for bowel preparation. Considering the high patient load per session and practical difficulty in reduction of waiting time Sri Lankan setting utilizing split dose regimen , may be a more practical solution.

Documentation of bowel preparation status was only done in 58.4% procedures. (N=123, p=1.00). This study also found that non-standardized terms such as 'poor' and 'good' to describe the bowel preparation status were used in the documentation. However this need to be avoided and an objective validated method such as Boston bowel preparation score should be followed in order to minimize inter-observer variability.

There is an extremely poor compliance in relation to documentation of the medications utilized during procedures. Although the required minimum is 98% , only 7.6% (N=16, p=1.00) procedure notes mentioned the used medications accurately.

Another important quality measure that falls behind required target is maintaining an adequate withdrawal time. Although the recommended minimum withdrawal time is 6 minutes(for a negative colonoscopy), mean withdrawal time of a negative colonoscopy in the study is 2.5 minutes(p=0.2752, CI-2.337-2.463). In large scale study, Shaukat et al showed that shorter withdrawal time is an independent risk factor for lower ADR and interval CRC due to missed lesions[25]. A randomized controlled trail which utilized tandem colonoscopies to compare adenoma detection rates and adenoma miss rates (AMR) between 3-minute and 6-minute withdrawal time demonstrated that regardless of expertise, a shorter withdrawal time is linked with low ADR rate and high AMR[26]. Therefore, mean withdrawal time of 2.5min is not acceptable and requires urgent attention of the endoscopists to avoid missing lesions.

In addition, none of the procedures had withdrawal time measured or documented. High patient load per session, not being aware of the recommended withdrawal time and its importance could be the reasons for this. Mean duration for a negative colonoscopy in this study was 12 minutes. In contrast, ESGE guidelines recommends minimum of 30 minutes for a routine colonoscopy slot. However, with the high patient load and lack of endoscopic facilities in Sri Lankan setting allocation of such a time slot may not be practical.

Post-procedure quality indicators

Post procedure complications such as significant post polypectomy bleeding or perforation was not encountered in this study. There were no admissions due to endoscopy related complications over a 30 day follow up period. Therefore, these indicators met the required targets.

Proper documentation of each LGIE is of utmost importance since the report is utilized in planning further patient care. ASGE and ESGE recommends that documentation should follow Minimum Standard Terminology (MST) when reporting endoscopic findings [27]. None of LGIE reports met assessed criteria and 68% failed to have at least 50% of mandatory documentation aspects.

Not being aware of the importance of documentation, not having a computer-based documentation system and lack of time can be considered as the causes for poor quality in documentation. Therefore, it is important to educate endoscopists regarding MST in order to achieve required standard in documentation.

Conclusions

In conclusion, out of 5 pre-procedure indicators, none reached expected targets. Considering that all pre-procedural indicators being non-technical and not depending on quality of facilities available, guidelines can be easily implemented by educating health-care workers and by using a proforma.

Out of 7 intra-procedure quality indicators, ADR was the only measure which exceeded the required target. Since it is considered as one of the most crucial indicators this can be considered as a positive aspect. Failure of adherence to recommended withdrawal time, poor assessment and documentation of bowel preparation are major drawbacks and can be improved by proper education of endoscopists. Split dose regimen of bowel cleansing will be more suited in achieving required level of bowel preparation in overcrowded Sri Lankan setting. In addition, regular audits are required to assess the performance indicators such as Caecal intubation rate, ADR and complication rate of individual endoscopists to determine whether their skill levels are maintained above the recommended level.

In post procedure measures, poor quality of documentation is a major failure identified in this study and it can be improved with increasing the awareness regarding MST.

In summary, most of the quality measures can be improved by re-education of endoscopy staff regarding guidelines and quality indicators, as failures are due to lack of awareness rather than lack of resources. As a follow up, we plan to develop a proforma based on the criteria that were assessed. This will be piloted in a future and could be recommended for endoscopy centers throughout the country, provided it is successful in achieving the standards.

Preferences

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SCIENTIFIC ARTICLE

Trials, tribulations and the emergence of total thyroidectomy - a Sri Lankan perspective

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Keywords: Total thyroidect ,mini incision, lateral approch

Abstract

The technique of thyroidectomy has emerged during the last 100 years, from a turbulent past', due to the outstanding contributions made by many including the "Magnificent Seven" of thyroid surgery. The dissection of the gland, preservation Parathyroid function and protecting the Nerves are dealt with meticulously.

Total thyroidectomy is associated with complications of bleeding, permanent injury to Nerves and permanent hypoparathyroidism. Many centres have reported incidence of complications around 1-3%. This is the bench mark for surgeons world over.

Voice change is a major concern after thyroidectomy. A study has shown that RLN recovery much faster than the recovery of the EBSLN. The recovery will take up to 3 months in most patients.

Assessment of the surgical practices related to thyroid disease in Sri Lanka has shown that the practices have changed over the last decade. More total thyroidectomies are undertaken. Younger surgeons are undertaking more total thyroidectomies.

The quoted incidence of Incidental carcinoma is around 10-20% in the literature. In two studies done in the unit, an incidence between 8.8% and 11.38% was seen. This factor must be considered in surgical decision making for benign disease.

Most common cause of recurrences is the enlargement of embryological remnants of the thyroid and a modern thyroid surgeon must excise the embryological remnants meticulously.

Surgery for recurrent goitre is a difficult task. Data confirms that Lateral approach to the thyroid makes the task much easier.

Cosmetic issues and cost must also be considered in thyroidectomy. Data confirms that Mini incision open thyroidectomy is a safe cost effective alternative to endoscopic thyroidectomy The obituary of open total thyroidectomy shall not be written for a long time.

Introduction and historical backdrop

Thyroidectomy has an unenviable record historically. It is probably the only operation which was banned as a procedure (1,2&3) and resurrected to new heights in the last 10 decades. This was mainly due to the efforts of the father of thyroid surgery, Theodore Kocher along with "magnificent Seven" of thyroid surgery namely, William Halsted, Charles Mayo, George Crile, Frank Lahey and Thomas Dunhill.

For a long time was subtotal thyroidectomy was the procedure of choice in most thyroid diseases. This was due to many reasons including the non-availability of replacement oral thyroxine and fear of complications. In the 20th century endocrine surgeons around the world were adopting the technique of total thyroidectomy (TT) due to high incidence of recurrence of goitre following subtotal surgery. This was based on the fact that recurrence was high with a subtotal procedure especially in MNG as the disease process affected the whole gland (4).

The evolution of the technique of thyroidectomy

Many improvements in the technique of thyroidectomy have evolved over several decades. Fundamentally tesse changes can be divided into eras, before the 1970s and the 20th century after 70s.The changes are summarized in table 1.

The lateral dissection advocated the ligation inferior thyroid artery as laterally as possible, this endangered the blood supply to the parathyroids. In the previous era the Identification especially of the EBSLN was not undertaken properly. The RLN and the EBSLN are now identified meticulously.

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Table 1 - The evaluation of the technique of the thyrodectomy

	1970s	20th Century (latter part)
Technique	Lateral dissection	Capsular dissection
Nerves	Recurrent Laryngeal Nerve (RLN) "encountering" dissection External branch of Superior laryngeal neve (EBSNL)??	routine RLN&EBSLN identification
Completeness	Anatomical	Embryological Tubercle of Zuckerkandl Thyrothymic remnants(TTR) & Pyramidal lobe(PL)Identified and excised
Parathyroids	Preservation	Auto transplantation in situ routinely
Lymph nodes (for Malignancy)	"Berry picking"	Selective Node dissection

The parathyroids were not dealt with adequately in the pre 70s era and the lymph nodes were dealt with inadequately in that era. The embryological remnants left behind gave rise to a significant number of recurrences. The newer technique of TT addresses all these issues properly.

In 2002 the author and the unit adopted TT for benign disease. The initial results of total thyroidectomy for benign disease in was presented in 2003. The series consisted of 22 patients. It created a heated debate about the appropriateness of the procedure (5). Nearly 1000 total thyroidectomies have been performed by the author from 1999 to date, adopting the techniques forming the basis for the ensuing dissertation. Complications of thyroidectomy

Surgeons in Sri Lanka encounter goitres commonly in clinical practice. The possibility of complications is always uppermost in the minds of all who undertake thyroidectomy.

The rate of complications of total thyroidectomy reported world over is around 1-3% for nerve injury and permanent hypocalcaemia (6, 7 & 8), as depicted in Table 2.

Only a few scattered reports are available in the literature regarding post-operative complications of thyroidectomy in Sri Lanka.

Complications of Thyroidectomy a Sri Lankan perspective

A study was undertaken to assess the post-operative complications after total thyroidectomy for benign disease. Study was focused on the complications of Hypoparathyroidism and Nerve palsy as significant post-

Table 2- Complications of total thyroidectomy – from world literature

Study	Permanent recurrent-Hypoparathyroidism%	laryngeal-nerve injury %
Clark	0	1
Harsens	0.45	2.7
Reeve et al	0	0
Khadra	0.5	0.6
Liu et al	1	0

operative bleeding was not seen. The cohort study was from June 2005 to May 2009.

102 patients were eligible. The results were as follows:

- ·Fourteen patients (14) developed hypocalcaemia
- Twelve (12) – (11.7%) had transient and 2 (1.96%) had permanent deficiencies.
- Eight patients (8) developed hoarseness, of which seven (6.86%) had transient hoarseness and only one (0.98%) had permanent hoarseness.
- A mean thyroid weight of 91.78gm was observed in the uncomplicated group. Those who developed postoperative hypocalcaemia and transient hoarseness had a mean thyroid weight over 100 gm.
- One patient (1), with a thyroid weighing 195gm developed permanent hoarseness due to RLN injury. The surgery in this patient was undertaken for a recurrent goitre.
- It appears that the risk of permanent nerve injury increased if the gland weight is more than 10 times the normal size, but this must be interpreted cautiously as there is only one patient with permanent hoarseness in this study (9).

Voice change in total thyroidectomy

Since permanent voice change was one complication that was highlighted in the above study, a prospective cohort study was undertaken from Sept 2015 to assess the voice change in patients undergoing total thyroidectomy. All components of voice such as; Pitch, Intensity, formant and pulses may be affected in varying degrees with injury to RLN and EBSLN or both.

The main components of voice which affects subjective variation of voice are deemed to be intensity and pitch. It is generally accepted that the RLN is injury is indicated more by the pitch and Intensity changes indicate damage to the EBSLN.

54 patients were assessed. Total thyroidectomy was done for both benign and malignant goitres. Careful intra-operative identification of RLN & EBSLN was done. Equipment used for assessment of voice was a standard microphone and voice recorder. All patients were asked to pronounce vowels ("a, e, i, o, u") in the same order and the word ("Uswatakeiyawa") during a prerecording rehearsal.

All recordings were limited to 6 seconds to simplify the analysis. Same vowels and the word was recorded before and after thyroidectomy. Same file format, venue (calm isolated room) and position (sitting) of the patient was used to minimize errors.

Later, the voice was serially assessed using the same technique after two weeks, six weeks, three months and six months post-operatively. Recorded data were analyzed using standard voice analyzing open source software "PRAAT" which provides analyses of pitch and intensity.

Pre-operative and post-operative values were used for objective assessment of voice and statistical analysis was done with SPSS version 20.

The findings

- ·Eight (8) -(14.8%) patients failed to achieve pre-operative pitch at two weeks. The pitch improved in two (2) out of eight patients after six weeks.
- In contrast, 34 (62.9%) patients had low-voice intensity at two weeks, but 26 of them showed significant improvement at six weeks.
- This indicates that the recovery from possible neuropraxia of the RLN is much quicker than the recovery of EBSLN. These findings have not been recorded in previous studies.

All patients were able to achieve preoperative intensity and pitch in three months, which indicates that there was no objectively demonstrable permanent injury to the EBSLN nor RLN (10). There isn't much information similar to the findings of this study in the world literature.

The main limitations of this study were amongst other things were the small number of patients, not evaluating other components of voice, no data regarding occupation of the patients. A larger study addressing these issues will provide more robust data.

Surgical practices in dealing with thyroid disease amongst Sri Lankan *Surgeons*

In order to find out the practices of other surgeons in the country regarding decision making and surgical practices in dealing with thyroid disease. Two studies were undertaken in 2008 and 2019 to ascertain practices regarding thyroid surgery

A pre-tested questionnaire was sent to more than 100 general and ENT surgeons, to assess the practice of thyroid surgery. The questionnaire was answered anonymously. The questions were specific for the practice of thyroid disease & surgery. Technical aspects were also assessed with specific questions.

In 2008 - 33 surgeons returned the questionnaire. In 2019 - 32 surgeons returned the questionnaire. The findings show clear indications of change of practice from 2008 to 2019.The comparative results are shown in tables 3.

There is a definite change in surgical practices between the two assessments and most surgeons seems to be aligning themselves with the current global trends. The younger surgeons seem to be doing more total thyroidectomies.Incidental/ Occult carcinoma of the thyroid (ITC) and implications for surgical decision making

An occult or incidental carcinoma is a carcinoma detected in the final histology report, when surgery is undertaken for a benign goitre.

The prevalence of occult carcinoma varies from 10-20% (11,12,13). With a significant prevalence of ITC, if a subtotal thyroidectomy is done, assuming that the goitre is benign, the surgeon is faced with the perplexing issue of how best to deal adequately with the cancer detected on the final histology report.

Two studies were conducted to assess the incidence of occult carcinoma in 2003 and 2015. The first study in 2003 was a prospective study consisting of 68 patients. Data was collected from January 2003 to December 2005. 68 patients consisted of 67 females and 1 male, aged 28 to 67 years (mean 44.2 (SD=11.1) were eligible. The indications for surgery are depicted in table 4.

In 6 - (8.8%) patients, histological examination showed incidental carcinomas: 2 papillary, 2 medullary and 2 follicular carcinomas. There was no significant difference in age, clinical presentation and functional thyroid status of patients with incidental carcinomas and those with histologically confirmed benign diseases.

Since the incidence of ITC was significant, it added impetus to the argument to advocate total thyroidectomy even for benign disease in our patients (14).

In the second study done in 2015, 167 patients were assessed and all of them had a FNAC confirmed BethII/ Thy2 status prior to surgery. The Incidence of ITC was 11.38%. This has reinforced the argument for total thyroidectomy especially in MNG.

Recurrence of goitre and the role of total thyroidectomy

For about for about 100 years, Subtotal thyroidectomy was the standard operation for benign disease, such as MNG and Graves' disease. In the latter part of the 20th century and the early part of 21st century, surgeons had to deal with a large

Table 3

	2008	**2019**
Surgery for MNG	35%	97%
Non-Surgical Management of Graves' Disease	17%	59%
Non-Surgical Management of Hashimoto's Disease	76%	91%
Identification of RLN	92%	100%
Identification of EBSLN	9%	31%
Identification of parathyroids	22%	81%
Use of Drains routinely	90%	56%
Total Thyroidectomy for MNG	35%	70%
Years of experience	2-15years	5-25years

Table 4 - Indications for thyroidectomy in the study population

Indication	Number of subjects	%
Multinodular toxic goitre	32	47.1
Multinodular non-toxic goitre	20	29.4
Thyrotoxicosis	9	13.2
Graves' disease	3	4.4
Colloid goitre	3	4.4
Thyroiditis	1	1.5
Total	68	**100**

number of recurrent goitres. This lead to reassessing the surgical options in benign disease of the thyroid as reoperation was definitely associated with increased morbidity due to scarring distortion of anatomy and friability of tissues (15, 16). Embryological remnants are a major cause of recurrent goitre (17 18). It is universally accepted that the embryological remnants must be carefully looked for and excised during thyroidectomy to prevent recurrence of goitre and would be a critical step in total thyroidectomy for a cancer.

A study was undertaken in 2013 to assess the presence of embryological remnants in patients undergoing thyroidectomy. 100 consecutive patients were included in this prospective study. At thyroidectomy the presence of remnants and the location size etc. were carefully recorded. All specimens were numbered photographed for subsequent clarifications.

The findings were:

The pyramidal lobe (PL) was found in 50% of the patients, the Tubercle of Zuckerkandl (ZT) was found on one side in 94% of the patients and bilaterally in 64% of the patients. The Thyrothymic remnant (TTR) was found in 30% of the patients. The implications of this findings in relation to total thyroidectomy (19).

Travails of redo thyroid surgery – The lateral approach

Redo -Total Thyroidectomy has been undertaken in more than 100 patients with recurrent goitres. The surgery is difficult and in the initial phase, the approach was midline exploration through the previous scar was utilized. The blood loss was usually about twice that of a first time thyroidectomy, due to scarring adhesions and difficulties of defining planes.

Due to the problems faced, in the last 7 years, we have practiced the use of the lateral approach. The lateral approach utilizes the previous scar till the deep fascia is reached. The deeper dissection is done in the natural plane between the strap muscles and the anterior border of the Sternomastoid muscle. This approach has the advantage that that there is no fibrosis or scarring and the dissection is in a 'virgin' plane. The plane of deep dissection is shown in Figures 2 & 3.

A study was done to assess the outcomes of the lateral approach in recurrent goitres in 2015. All patients who has a lateral approach for recurrent goitres from 2008 to 2015 were included.

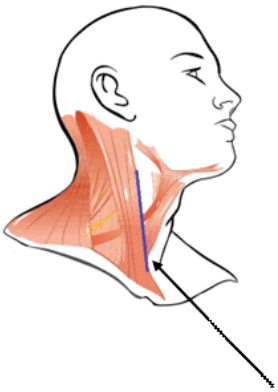

Figure 1

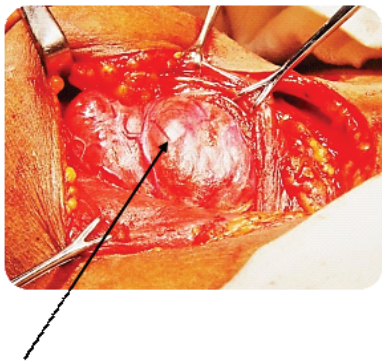

Figure 2

Dissection between Sternomastoid Muscle and the Strap Muscles

The findings:

- 29 -(90.6%) females and 3 (9.4%) males. Age ranges between 28 and 61 (median43.37).
- 28 Hemi thyroidectomies performed (87.5%)
- 9 -(28.1%) redo thyroidectomies for large goitres
- 18 -(56.2%) done with mini incision with lateral approach - small goitres
- Bilateral explorations on 3(9.4%) patients
- 4-(12.5%) lateral approaches done for completion thyroidectomies for follicular malignant lesions.
- 3 - (9.4%) operations for parathyroid explorations and one (3.1%) for redo parathyroid exploration.
- In terms of complications, transient clinical hypocalcaemia noticed in four (4)- (12.5%) patients and one (1)- (3.1%) developed hoarseness of voice, which was temporary.

No permanent nerve injury or hypoparathyroidism was noted. None of them had complications like haematoma and postsurgical stridor.

These rate of complication rates comparable with the rates described in the preceding part of this dissertation. The conclusion of the study was that the Lateral approach to thyroid is a good alternative to the standard approach for re-explorative thyroid surgery (20).

Cosmetic Issues in total thyroidectomy & Mini Incision Total thyroidectomy/ Hemi thyroidectomy

Open thyroidectomy is a very safe time tested universally applicable operation. It is done with a cervical incision and for many years a large incision was used. While many patients had a cosmetically acceptable result, a few patients were left with an unsightly scar in the neck. This was a concern for younger patients.

At the start of the 21st century, several centres of the world reported thyroidectomy through a small cervical incision (3-4 CM) in order to overcome issues with the cosmetic result, improve patient comfort and reduce costs by shortening the hospital stay (21). The incision was placed on a suitable natural cervical skin crease to achieve the best outcome.

Mini incision has been practiced in the unit from 2007. A prospective cohort study was carried out on all patients undergoing MIT between 2008 to 2015 Patients with small size glands, nodules less than 2cm were included. Size of the gland was the main factor before deciding on a MIT.

Twenty-nine (29) MITs were performed

- ·Female - 26 Male -3
- Median age 34.26y (range 22 - 42yrs)
- Hemi-thyroidectomy- 18, Total thyroidectomy -11
- The commonest indication for total thyroidectomy - Small MNG
- The longest follow up - 7 years
- None had recurrent laryngeal nerve injuries or significant haematoma formation
- Transient Hypocalcaemia seen in 3% of total thyroidectomies
- The cosmetic outcome was excellent

Mini incision thyroidectomy is a safe, cost effective alternative to endoscopic thyroidectomy. Only caveat is that careful selection of patients must be done. It is not suitable for large goitres.

Conclusion

The technique of thyroidectomy has evolved a great deal over the last 100 years. The dissection of the gland, preservation of the function of parathyroids and maintaining integrity of the RLN and the EBSLN are dealt with much more meticulously now. These developments have made open total **thyroidectomy** a safe acceptable, cost effective universal operation

One of the main issues related to total thyroidectomy is the associated complications. The common complications are bleeding, permanent injury to RLN & EBSLN and permanent hypoparathyroidism. The reported incidence of complications of total thyroidectomy world over is around 1-3%. This is the bench mark for surgeons' world over. In the studies conducted in the authors unit very similar results have been achieved. This may be considered a bench mark from a Sri Lankan perspective

In studies done on the surgical practices in Sri Lanka regarding thyroid disease/ surgery, it is clear that the practice has changed over the last decade. More total thyroidectomies are undertaken. Younger surgeons are undertaking more total thyroidectomies.

Incidental carcinoma has a significant incidence especially in endemic regions of the world. The quoted incidence is around 10-20%. In two studies done in the unit the incidence estimated has been between 8.8% and 11.38%. Surgeons must be cognizant of this in the decision making when surgery is undertaken for benign disease of the thyroid.

·Recurrence of Goitre is a 'throwback' from the past as subtotal thyroidectomy was the standard operation for more than 100 years. Dealing with recurrent goitres is a difficult task and most common cause of recurrences is the enlargement of embryological remnants of the thyroid. The remnants are the Pyramidal lobe, Tubercle of Zuckerkandl and the Thyrothymic remnants. The thyroid surgeons must identify & excise all embryological remnants meticulously.

Surgery for tecurrent goitre is a difficult task. Likelihood of complications is higher. Lateral approach to the thyroid makes the task much easier. The data from a study has shown it be safe and effective. This may be considered another bench mark from a Sri Lankan perspective.

Cosmetic issues and cost must also be considered in thyroidectomy. Cosmetic issue becomes important especially in younger females. Data confirms that, mini incision open thyroidectomy, is a safe cost effective alternative to endoscopic thyroidectomy especially from a Sri Lankan perspective.

·The obituary of open thyroidectomy will not be written in the foreseeable future.

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SCIENTIFIC ARTICLE

A comparative study of early versus delayed laparoscopic cholecystectomy for acute cholecystitis

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Keywords: Acute cholecystitis, Laparoscopic, cholecystectomy, pain, abdomen, gallstones

Abstract

Introduction

Inflammation of the gall bladder is known as acute cholecystitis. Sudden pain in the upper right of the abdomen along with bloating, vomiting, fever, tenderness are symptoms of acute cholecystitis. Laproscopic cholecystectomy is considered to be the gold standard in treating acute cholecystitis.

Objective

To compare operative and post-operative outcomes like time required for operation ,bile ductal injury , postoperative occurrence of pain, total length of stay in hospital , need for conversion to open cholecystectomy between immediate and late LC.

Methodology

Sixty-eight patients aged between 18 to 60 years diagnosed as acute cholecystitis admitted for the intervention of laparoscopic cholecystectomy were considered. Patients were categorized and analyzed based on length of time from presentation to surgery. Operation performed within 3 days of presentation was defined as 'early' laparoscopic cholecystectomy and anywhere after 3 days as 'delayed' laparoscopic cholecystectomy.

Results

The p value obtained for ROFA is 0.042. and that for Pain scale is 0.027. Since the p value is found to be less than 0.05, the null hypothesis is dismissed and we can summarise that there is a significant difference in the means of two groups with respect to these factors. No incidence of conversion to open cholecystectomy was found in both groups.

Conclusion

Both early and delayed laparoscopic cholecystectomy is safe in the management for acute cholecystitis but return to full activity is early and pain scale is less in cases of early cholecystectomy.

Introduction-

Acute cholecystitis (AC) is the inflammation of gallbladder that occurs due to obstruction of the biliary outflow from cystic duct or ineffective emptying of the gallbladder". The most common reason for impaired emptying is stones or biliary sludge. It is found in both genders but has a predisposition for certain populations. [1] The risk of formation of gallstones is high in women, obese patients, pregnant women, and persons ≥40 years of age.[3] The overall global prevalence of cholecystitis is estimated to be around 20% with higher incidences in developed nations. In the United States, it is estimated to affect about 20 million people. [4] In 90% of the patients, AC results from gallstones. It is predicted that 20-40% of subjects with gallstones will grow symptoms and 12% will result in AC.[5] Laparoscopic cholecystectomy (LC) is considered as gold standard for the treatment of AC. [6] However, there is disagreement regarding the ideal time of LC in AC patients. There are two categories of LC including early and delayed cholecystectomy. Recent evidence showed that early LC can be performed before 72 hours from the symptomatic presentation, defining a firm 72- hours boundary.[2,7-9] The advantage of early LC including ultimate treatment throughout the same admission, decreases the chances of unsuccessful treatment, empyema, gangrene, and perforation.[2] Moreover, early LC is associated with reduced hospital stay, and expenditure in comparison to delayed LC.[10-12]

This current study was taken up to differentiate the incidence of postoperative complications of early versus delayed laparoscopic cholecystectomy.

Materials and method

The current prospective observational study was performed at Dr. D. Y. Patil hospital and research center, Kolhapur for 2

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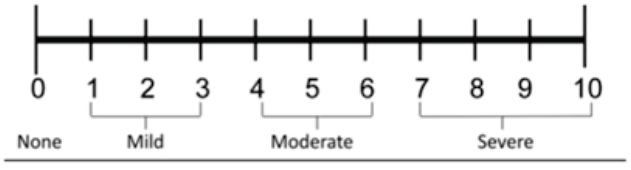
years after the approval of the institutional ethics committee. Ethical approval for this study was provided by (DYPMCK/408/2021/IEC) the Institutional Ethics Committee, Dr.D.Y. Patil Medical College, Kolhapur, Maharashtra.Pin-416003, Chairperson Professor C.D Lokhande granted approval for the study on 24/03/2021. A total of 68 patients who fulfilled inclusion criteria such as the patients aged between 18 to 60 years and those diagnosed with acute cholecystitis presenting within seven days from the presentation of symptoms were included in the study. Whereas, patients presenting with acute cholecystitis with duration of symptoms more than seven days, having stones in common bile duct or "duct dilatation", patients with significant medical disease that made them unfit for "laparoscopic surgery", and patients, who rejected to undertake "laparoscopic surgery", patients with "coagulative disorders , severe chronic obstructive pulmonary disease, end-stage liver disease, cardiac failure, surgical jaundice", patients of acute cholecystitis with moderate to severe pancreatitis and pregnant women" were omitted from the study. A total of n=68 patients were included in the study and a detailed medical history was obtained with a specific focus on symptoms such as pain in "right upper quadrant", vomiting and elevated temperature. Clinical evaluation was done to correspond and for confirmation of the diagnosis and the patient was evaluated for operative intervention. Basic biochemical, radiological and pre-anaesthetic tests were undertaken such as "complete haemogram, blood sugar level, renal function tests, liver function tests, chest X-ray, electrocardiogram, serology for viral markers", and abdominal ultrasonography were done in all patients. Intraoperative/postoperative pain was assessed by using "numeric pain rating scale". Patient was requested to make three pain readings equivalent to "present, best and worst pain" experienced immediately after the operation upto 24 hours. The patients 24 hours pain score was calculated using the average of three readings. Patients were instructed to indicate the severity of discomfort on range of "0 (no pain) to 10 (worst pain imaginable)".

Clinical criteria used to define acute cholecystitis are pain in the Right upper quadrant, tenderness in right hypochondrium (Murphy's sign), and fever (temperature >100 degrees F), whereas sonological findings show Cholelithiasis (presence of stone- single /multiple/ biliary sludge), wall thickening (>3 mm), sonographic Murphy's Sign, peri-cholecystic fluid. Subjects were categorized into two groups as 'early group' and 'delayed group' each with n=34 patients depending on the "length of time from presentation to surgery". Intervention of cholecystectomy within 3 days of the presentation was defined as "early laparoscopic cholecystectomy (early group)" and anywhere after 3 to 7 days was considered as delayed laparoscopic cholecystectomy (delayed group). Data were collected and entered into a Microsoft excel sheet. Using the SPSS IBM 20 version categorical variables were evaluated in terms of frequency and percentages, and the distribution was illustrated using pie charts. Independent sample T test and Mann Whitney u test were used to find the significant difference between the groups. P value less than 0.05 was taken to be significant.



Results

Age distribution

The mean age of the "early and delayed group" patients was 46.64±12.76 years and 44.76±12.18 years respectively. The patients of both groups were categorized according to age groups such as 18-32, 33-46 years, and 47-60 years. Most of the participants in the "early and delayed groups" were belonging to the 46-60 year's age group (44% and 60% respectively) (table.1)

Table 1. Distribution of subjects according to age categories

Age (years)	Early group		Delayed group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
18-32	6	18	7	20
32-46	13	38	7	20
46-60	15	44	20	60

Gender distribution

In the early group, females were predominantly present (74% vs 26%) whereas, in the delayed group males were predominantly present (68% vs 32%) (fig 1).

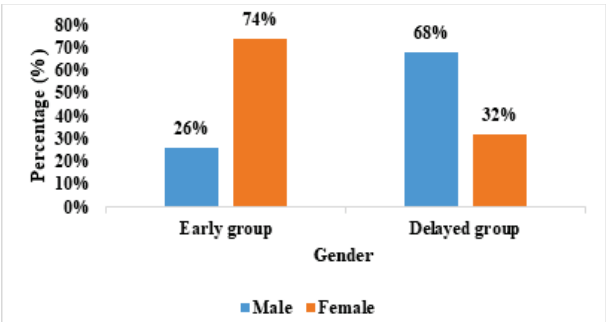


Fig 1. Distribution of subjects according to gender

Duration of surgery (DS)

The mean DS in the "early group and the delayed group" was 66.47±10.19 min and 70.44±15.39 min respectively. There was no statistically significant difference in DS when compared amongst the groups (P=0.214) (table 2).

Table 2. Comparison of duration of surgery

Group	Duration of surgery (min)		T value	P value
	Mean	SD		
Early	66.47	10.190	1.254	0.214
Delayed	70.44	15.392		

Duration of hospital stay (DHS)

A significant difference in DHS was observed when compared between the groups (4.78 ±1.44days vs 7.44±1.21 days, P=0.00968) (table 3).

Table 3. Comparison of duration of hospital stay

Group	Duration of Hospital stay (days)		T value	P value
	Mean	SD		
Early	4.78	1.447	6.210	0.00968
Delayed	7.44	1.211		

Return of full activity (RFA)

In early group patients, the mean duration required for RFA was significantly less compared to delayed group patients (15.82±2.48 days vs 16.97±2.05 days P=0.042) (table 4 and fig. 2).

Table 4. Comparison of return of full activity

Group	Return of full activity (days)		T value	P-value
	Mean	SD		
Early	15.82	2.48	2.078	0.042
Delayed	16.97	2.05		

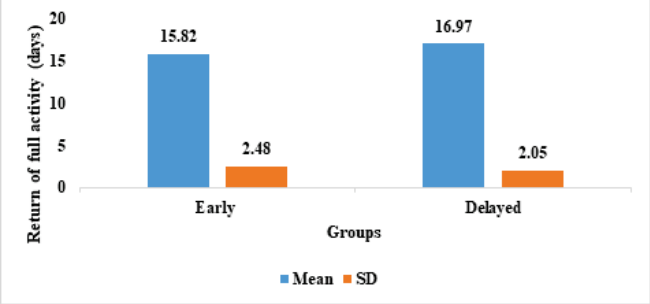


Figure 2. Distribution of return of full activity

The mean pain scale score was significantly more in "delayed group patients" (6.08±0.75) than in "early group patients" (4.823±0.96) (P=0.027) (table 5).

No incidence of conversion to open cholecystectomy was found in both the groups.

Table 5. Comparison of pain scale

Group	Pain scale		T value	P value
	Mean	SD		
Early	4.823	0.968	4.106	0.0273
Delayed	6.08	0.753		

Discussion

The study aimed at performing a differentiation between early and delayed laparoscopic cholecystectomy for acute cholecystitis in patients aged between 18 to 60 years. The significant findings of the study were the subjects treated with early laparoscopic cholecystectomy had lower hospital stay (P=0.00968) and postoperative pain scores (P=0.027) compared to a patient with delayed laparoscopic cholecystectomy. Moreover, in early group subjects, the postoperative RFA was rapid compared to delayed group subjects (15.82±2.48 days vs 16.97±2.05 days P=0.042). These findings suggested that early laparoscopic cholecystectomy has fewer postoperative complications compared to delayed laparoscopic cholecystectomy. This suggests that the prevalence of acute cholecystitis is more in subjects≥46 years of age. Moreover, out of 68 patients, 36 were female similarly, Lal S. et al. and Rather ZM also depicted female predominance. [10] The mean DS in early group patients was less (66.47±10.19 min) than in delayed group patients (70.44±15.39) however, the difference was statistically insignificant (P>0.05). The difference in the results may be due to the difference in inclusion criteria, type

of the study, or surgeon-associated factor. In this study no incidence of complications such as bile leak, bile duct injury, and complication associated open procedure in any patients of either group. The strength of the study was the appropriate sample size and uniform application of protocol. The study showed that early intervention was better than delayed surgery in terms of duration of surgery, duration of hospital stay, return of full activity, and pain. The limitations of the study were the investigator was not blinded during data collection, and the study was single centered, all together could have led to some bias. The other important limitation such as operation expenditure was not assessed in this study. Randomization was not performed due to the inadequate sample size. Further, a blind randomized study with an adequate sample size is required to approve the present study discoveries. Moreover, considering the variability in the incidence of complications in literature, we assume that there might be a correlation between the surgeon's experience and the incidence of complications that need to be evaluated.

Conclusion

The time required for surgery In laparoscopic cholecyst ect omy for acute cholecyst is, the duration of surgery was less in the early group than the delayed group. Also, the duration of hospital stay was notably more in the delayed group compared to early group patients. The time required to return to full normal activity was significantly less in early group subjects than in delayed group subjects. The mean pain scale score was significantly more in the delayed group patient. No incidence of postoperative complications was seen in either group. Thus, we can conclude that early laparoscopic cholecystectomy was better than delayed laparoscopic cholecystectomy.

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SCIENTIFIC ARTICLE

With the rising trend of prostate cancer, where does northern Sri Lanka stand? a cohort study from a tertiary care centre.

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Keywords: prostatic carcinoma, high risk, polymetastatic disease, androgen deprivation therapy

Abstract

Introduction

Prostate cancer is the second most common cancer among males all over the world in 2020. As per the global cancer observatory 1, 414, 259 (7.3%) cases were diagnosed in 2020 worldwide. The study aims to analyse the variations in demographic and clinico-pathological characteristics of prostate cancer in the Northern Province.

Methods

This is a cross-sectional descriptive institution-based study that recruited all the prostate cancer patients who were treated at the Teaching hospital, Jaffna from August 2019 to August 2022. Data were extracted retrospectively from the clinic records of the patients as well as histopathology documents.

Results

A total of 141 diagnosed patients at Teaching Hospital Jaffna were analysed. The mean age of the sample was 70.11± 8.43 years. Out of 141 patients, 30.49% were diagnosed to have localized disease and 26.24% and 43.26% with locally advanced and metastatic disease respectively. Out of those who had localized disease 68.5% were managed with radiotherapy, 23.25% with active surveillance and 11.6% with radical prostatectomy. The mean value of PSA was 70.11±8.4. The majority 97.2% had small acinar adeno carcinoma as histology. As per the D'Amico classification system for prostate cancer, 2.83% belonged to low-risk category, 80.1% belonged to high-risk category.

Conclusion

There is a rising trend in the incidence of prostate cancer in Sri Lanka over the recent past. Most of the cases are advanced at the initial presentation. It implies the need for screening programmes with PSA in near future to detect cancer at early stages, implementation of cancer awareness programmes as practised in Western countries and strict adherence to national guidelines on management and referral pathways

Introduction

Prostate cancer is the second most common cancer among males and the fourth most common cancer all over the world in 2020. As per the global cancer observatory 1, 414, 259 (7.3%) cases were diagnosed in 2020 worldwide. It is the fifth most common cancer among males in Sri Lanka with an incidence of 896 (6.3%) in 2020. 364 deaths have been reported due to prostate cancer in 2020 in Sri Lanka [1].

There is a geographical variation in the incidence and prevalence of prostate cancer worldwide. It is said that the incidence is higher among African American men and their mortality is nearly double than of white men [2]. As per the GLOBOCAN estimate the highest incidence of prostate cancer is in Europe followed by Asia and the mortality is highest in Asia leaving Europe in second place [1,3].

Over the last three decades, there is a dramatic increase in the incidence of prostate cancer due to increased detection by means of serum prostate specific antigen (PSA) testing and the incidental detection from the specimens of transurethral resection of prostate (TURP) specimens as a treatment of symptomatic enlarged prostates, increased awareness of prostate cancer among public and also due to increase in the elderly population [4]. Development of prostate cancer has a multifactorial aetiology. They are age, ethnicity, family history, environmental factors, obesity and dietary factors [4]. Prostate cancer is more common in those above 75 and less likely in those less than 40. The age coincides with the years at which the androgen/ oestrogen level reverses. It is said that Afro-Caribbean men are at greatest risk of prostate cancer than Caucasian men and Japanese men have the least risk than others. Anyhow Japanese men living in other parts of the world have an increased risk which shows a strong geographic and environmental influence on the development of prostate cancer [4-6].

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The objective of this study is to analyse the variations in demographic and clinico-pathological characteristics of prostate cancer in the Northern Province.

Methodology

This is a cross-sectional descriptive institution-based study. The study population was all the prostate cancer patients who were treated at the Teaching hospital, Jaffna. The study period was from August 2019 to August 2022. The sample size was all the patients who were diagnosed and treated for prostate cancer during the study period. Data were extracted retrospectively from the clinic records of the patients as well as histopathology documents. A data extraction sheet was used to collect socio-demographic details and clinical details at initial presentation, imaging data and histopathological data during clinical reviews. The data were analysed using the Pearson chi-square test, and graphical illustrations.

Results

A total of 141 diagnosed patients at Teaching Hospital Jaffna were analysed. The mean age of the sample was 70.11± 8.43 years. Out of 141 patients, 43 (30.49%) were diagnosed to have localized disease and 37 (26.24%) and 61(43.26%) with locally advanced and metastatic disease respectively. Among those with localized disease, 4 had T1 and 39 had T2 stage, in those with locally advanced disease 18 had T3 and 19 had T4 and in those with metastatic disease 8 had T3 and 53 had T4 stage on Digital Rectal Examination (DRE) (Table 1)

The mean value of PSA was 70.11±8.4. 38 (26.9%) patients had a PSA value of more than 100, 44 (31.2%) ranging between 51 and 100, 36 (25.53%) between 11 to 50 and 23(16.1%) less than 10.

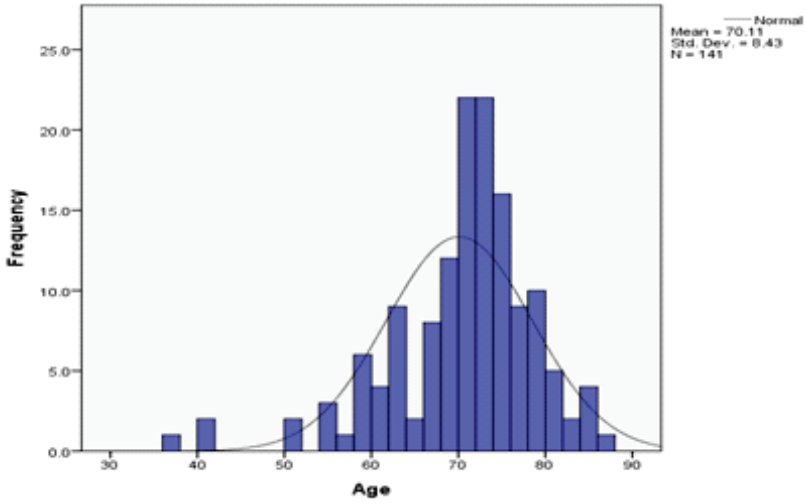

Figure 1. Age distribution of patients.

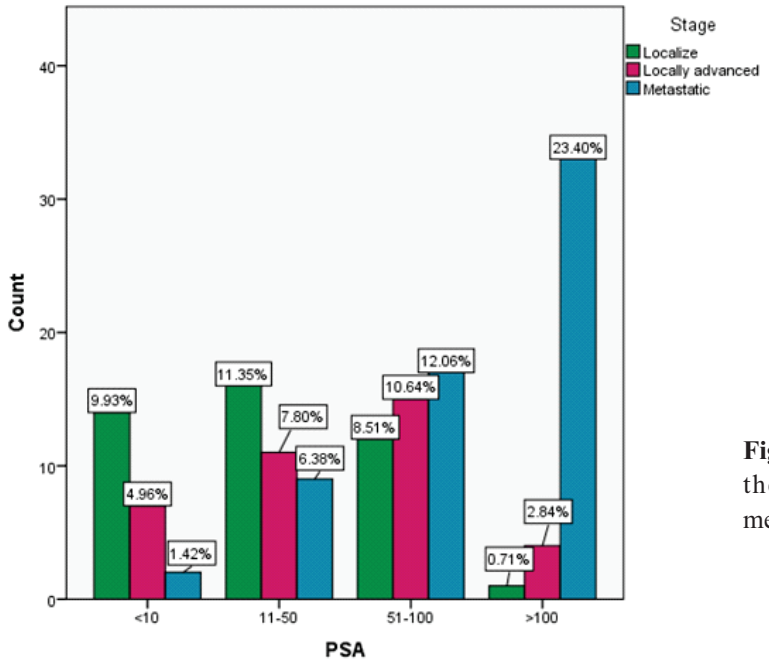

Figure 2. Distribution of PSA value among the localized, locally advanced and metastatic patients

Table 1: Distribution of clinical T staging with the localize, locally advanced and metastatic patients.

Clinical T Stage	Stage			Total
	Localize	Locally advanced	Metastatic	
T1	4(2.8%)	0	0	4(2.8%)
T2	39(27.7%)	0	0	39(27.7)
T3	0	18(12.8%)	8(5.8%)	26(18.4%)
T4	0	19(13.5%)	53(37.6%)	72(51.0%)
Total	43(30.5%)	37(26.2%)	61(43.3%)	141(100%)

Out of the 38 patients who had a PSA of more than 100, 33 were diagnosed to have metastatic disease, 4 had locally advanced and one had localized prostate cancer. Among those who had a PSA value ranging between 51 and 100, 17 had metastatic disease and 15 and 12 had locally advanced and localized disease respectively. Of those who had a PSA value ranging between 11 and 50, 9 had metastatic disease, 11 and 16 had locally advanced and localized disease respectively. Of those who had a PSA less than 10, 2 had metastatic disease, 7 and 14 had locally advanced and localized disease respectively. Among the 141 patients 27 (19.15%), 15 (10.64%), 29 (20.57%), 44 (31.21%) and 26 (18.44%) had an ISUP grade group of 1,2,3,4 and 5 respectively. 19 (73%) patients who had an ISUP grade group of 5 had metastatic disease. 25 (56.8%) patients who had an ISUP grade group of 4 was found to have localized disease. 19 (65.5%) patients who had an ISUP grade group of 3 had metastatic disease. 9 (60%) patients with ISUP grade group of 2 had metastatic disease.

As per the D'Amico classification system for prostate cancer, 2.83% (n=4) belonged to low risk category, none in the intermediate category and 80.1% (n=113) belonged to high risk category (Table 2).

Out of those who had localized disease 28 (68.5%) were managed with radiotherapy, 10 (23.25%) with active surveillance and 5 (11.6%) with radical prostatectomy. Patients with locally advanced disease were offered androgen deprivation therapy followed by radiotherapy. Among the 61 with metastatic disease, 50 had poly metastatic disease and 11 had oligometastasis. Nine (6.1%) had metastasis to the para aortic lymph nodes (M1a), 42 (29.6%) had metastasis to bones only (M1b) and 8 (5.6%) had metastasis to distant organs with or without involvement of bones (M1c). Polymetastatic disease were managed with Androgen Deprivation Therapy (ADT) alone or ADT followed by systemic chemotherapy depending on the performance score of the patients. Oligometastatic disease were treated with ADT followed by radiotherapy to the prostate gland in selected patient.

The majority 139 (97.2%) had small acinar adeno carcinoma as histology whereas 2 (2.8%) had ductal adenocarcinoma.

Table 2: The D' Amico classification system of prostate cancer

Risk category	Localize	Locally advanced	Metastatic
Low risk	4 (2.83%)		
Intermediate Risk	0		
High Risk	15 (10.6%)	37 (26.2%)	61 (43.3%)

Discussion

The incidence of prostate cancer in the Asian population seems to be much lower than in the Western population. Anyhow with the increase in the aging population, increase in PSA screening and disease awareness, increase in imaging modalities and incidentalomas and the westernization of Asians results in the progressively rising incidence of prostate cancer in recent years [7]. A review by Ha Chung et al. showed a general increase in prostate cancer incidence across China, India, South Korea, Vietnam, Japan, and Singapore [8].

Sri Lanka also shows a rising incidence of prostate cancer in recent years. The crude incidence rate of prostate cancer in Sri Lanka was 3.1 per 100 000 population in 2005, while it was 9.5 per 100 000 population in 2019, thus it shows a three-fold increase over the last 14 years[3]. A similar incidence can be noticed in India, which was 9.47/100000 population [1]. 141 patients diagnosed over the last three years in a tertiary care hospital in Northern province is indeed a big number. A similar trend has also been noted in a tertiary care hospital in the south of Srilanka, with 386 cases over 5 years [9].

Prostate cancer is the most common malignancy among older men. 64% of new prostate cancer cases in the United States were diagnosed in men older than age 65 years, and 23% in men older than age 75 years [10]. In a recent Sri Lankan study based on national cancer registry, the age at diagnosis was 65 years and above in almost 76.8% of cases and the highest number of cases was seen in the age group of ≥75 years. In this study, the mean age at diagnosis is 70.11+± 8.43 years. It seems patients from the northern part of Sri Lanka develop the disease fairly at a younger age compared to the other parts of Sri Lanka. Of the patients metastatic disease, the majority of them belongs to an age group of 63 to 75 years (57.3%, n=35) and the majority of patients with locally advanced disease belongs to an age group of 63 to 75 years (56.7%, n=29).

American cancer society (ACS) recommends the use of PSA as a screening test for prostate cancer and there is a rising tendency to use PSA as a screening test worldwide but not in Sri Lanka. There is no cutoff value of PSA to diagnose or exclude malignancy. Many use a cutoff value of 4 ng/ml to decide whether the patient needs further evaluation or not. As per the ACS guidelines, still, about 15% of men with a PSA below 4 will have prostate cancer if a biopsy is done, men with a PSA level between 4 and 10 have about a 1 in 4 chance of having prostate cancer and if the PSA is more than 10, the chance of having prostate cancer is over 50%. In this study, we have noticed 4.9% (n=7) of cases with prostate cancer having PSA less than 4, 23 with a PSA <10, out of which 2 were having metastatic disease.

In countries where routine PSA screening is practised, more than 90 per cent of prostate cancers are detected as localized disease and only 4 per cent of prostate cancers present with metastasis[11]. In India where routine screening with PSA is not practised, the majority of patients present in advanced stages [12]. Similarly in Sri Lanka, we see a majority of cases with an advanced disease which might be due to the absence of screening programmes. In this analysis more than two third of our patients presented with advanced disease, 61 (43.3%) with metastatic disease and 37 (26.2%) with locally advanced disease. Out of the patients with localized and locally advanced disease, a majority (n=52) belong to D' Amico high-risk category.

Recent guidelines by the national cancer control programme of the Ministry of Health, Sri Lanka recommends opportunistic screening with PSA for those with LUTS having clinically malignant or suspicious prostate gland on digital rectal examination or benign prostate on digital rectal examination but age below 70 years [13]. The true incidence of prostate cancer in Sri Lanka is underestimated in most instances due to a lack of proper referral pathways and it is being managed by non-urological surgeons as well.

Conclusion

There is a rising trend in the incidence of prostate cancer in Sri Lanka over the recent past. Most of the cases are advanced at the initial presentation. It implies the need for implementation of screening programmes with PSA in near future to detect cancer at early stages, implementation of cancer awareness programmes as practised in Western countries and strict adherence to national guidelines on management and referral pathways.

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SCIENTIFIC ARTICLE

Retrospective analysis of a single unit experience in laparoscopic cholecystectomy in northern Sri Lanka during the Covid-19 pandemic

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Keywords: prostatic carcinoma, high risk, polymetastatic disease, androgen deprivation therapy

Abstract

Introduction

Laparoscopic cholecystectomy is a surgical procedure that removes a diseased gallbladder for various indications. It is preferred over open cholecystectomy due to fewer complications and early recovery. However, it carries different operative and postoperative complications. In addition, the availability of resources and skillful surgeons limits its use worldwide. Analysing the experience of laparoscopic cholecystectomy will enhance the training and skills and improve the surgical outcome.

Methods

All the laparoscopic cholecystectomies done from July 2020 to July 2022 were analysed retrospectively.

Results

This study included eighty-seven surgeries with patients ages 8 to 84 years (mean 51.76 ±17.15). Male patients were 32.2% and females 67.8%. The indication for laparoscopic cholecystectomy was symptomatic gallstone disease in 72.4% acute/chronic cholecystitis in 14.9%, distal CBD stones in 5.7%, Gall bladder polyp in 3.4%, biliary colic in 18.4%, cholangitis in 1.2%, obstructive jaundice in 1.2% and pyocele in 1.2%. ERCP was performed by the surgeons of the same unit to manage 6.8% of the cases preoperatively and 2.2% post-operatively. Intra-operative difficulty or problems was seen in 24.13% of the cases, which included adhesions with adjacent organs in 14.9%, difficult identification of Calot's triangle in 3.4%, bile spillage 6.8% and abnormally distended gall bladder, adhered deep into the liver, and double gallbladder in 1.2% each. 1.2% of the cases needed conversion to open. Postoperative complications were noted in 20.68% of cases. 3.4% had Clavian Dindo grade I complications.

Conclusion

Professorial unit Teaching hospital Jaffna is performing laparoscopic cholecystectomies even in the presence of limited resources. The outcomes were comparable with the international standards published up to date.

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Introduction

Laparoscopic cholecystectomy is a minimally invasive surgical procedure to remove a diseased gallbladder [1]. It is being practised as the standard operation in managing gallstone disease. Good laparoscopic skills and advanced technology have widened its indications in most cases, including severe acute cholecystitis, chronic cholecystitis, gangrenous cholecystitis, acalculous cholecystitis, symptomatic cholelithiasis, biliary dyskinesia, gallstone pancreatitis, empyema and gallbladder masses or polyps [1,2].

Relatively less postoperative pain and discomfort, decreased postoperative ileus, earlier oral intake, decreased postoperative hospital stay, earlier return to normal activity, and improved cosmetic results are the known advantages of laparoscopic cholecystectomy over the open procedure.

However, training institutions worldwide report difficulties in completing laparoscopic cholecystectomies needing conversion or having postoperative complications. Common complications of laparoscopic cholecystectomy include bleeding, port site infection, bile leak and damage to the surrounding structure. The most severe complication is an iatrogenic injury of the common bile or hepatic duct [1-3]. Difficulty in delineating the anatomy because of the presence of fibrous tissue and scars compromises the easy identification of Calot's triangle. It is considered the major predisposing factor for common bile duct injury with severe morbidity [4]. Other complications, such as hospital-acquired chest infections and myocardial infarction, are also reported. The presence of anatomical variations and trainees with inadequate skills further makes the surgery difficult.

Auditing the difficulties and complications is necessary for a training institution to enhance the future training programme

to create skillful and safe laparoscopic surgeons.

Methodology

This is a retrospective descriptive study done at the professorial surgical unit of Teaching hospital Jaffna. In this study, we analysed the single unit experience of surgeons and trainees in performing laparoscopic cholecystectomy from July 2020 to July 2022. The professorial surgical unit of Teaching hospital Jaffna serves as a training centre for post-graduate surgical trainees in both open and laparoscopic surgeries. The study considered all the laparoscopic cholecystectomies done by surgeons and trainees, including senior registrars and registrars. Ethical clearance was obtained from the ethical review committee of the Teaching hospital, Jaffna. The data were collected retrospectively from bed head tickets and electronic health records. Collected Data was recorded in Excel and analysed the data using SPSS version 23. Collected data included demographics such as age and gender, indication for surgery, elective or emergency procedures, Intra-operative difficulties, drain placement, postoperative complications, conversion to open surgery, and procedures performed concomitantly with cholecystectomy. These data were analysed statistically and compared with published data worldwide.

Results

This study included eighty-seven laparoscopic cholecystectomies. All patients had negative pre-operative Polymerase Chain Reaction (PCR) or Rapid Antigen Test (RAT) for covid 19 infection. Patients' ages ranged from 8 to 84 years, with a mean age of 51.76 ±17.15. Male patients were 32.2% (n=28) and females 67.8% (n=59). Out of these patients, 26.4% (n=22) were Diabetic and 19.5% (n=17) were dyslipidemic.

The indication for laparoscopic cholecystectomy was symptomatic gallstone disease in 72.4% (n=63), acute/chronic cholecystitis in 14.9% (n=13), distal CBD stones in 5.7%(n=5), Gall bladder polyp in 3.4%(n=3), , cholangitis in 1.2%(n=1), obstructive jaundice in 1.2%(n=1) and pyocele in 1.2%(n=1).

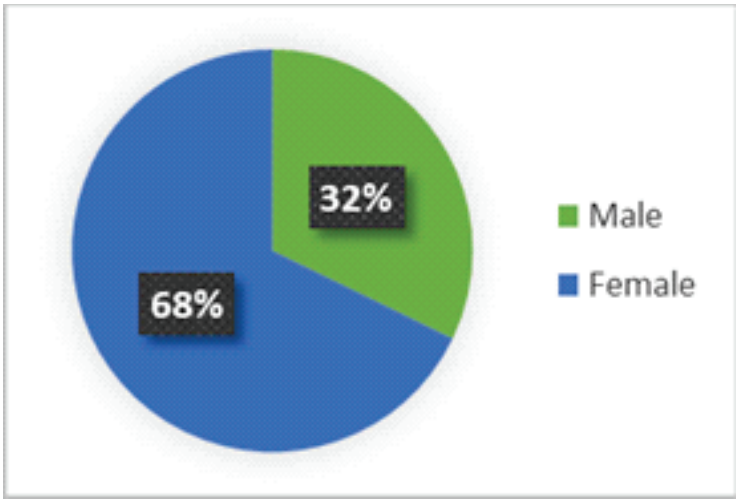

Figure 1. Gender distribution of the patients.

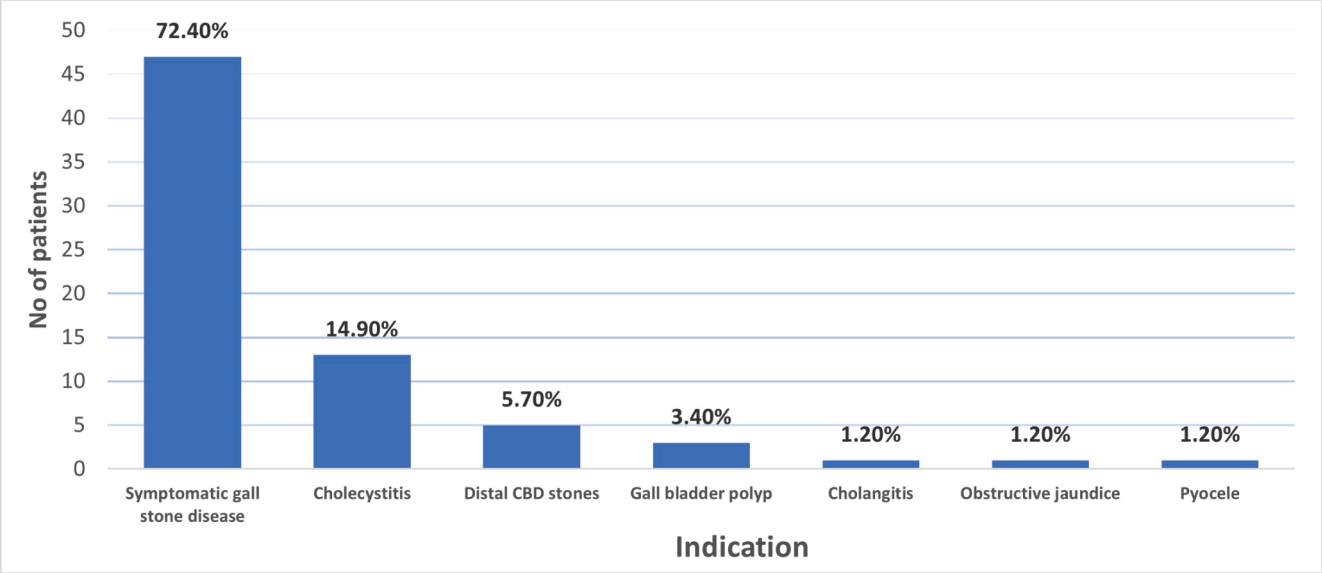

Figure 2. Indications for laparoscopic cholecystectomy

Out of the 87 cholecystectomies, one was done emergency (hot cholecystectomy) as and others were done electively.

88.5% of the cases were performed by the surgeons, and the rest, 8% by senior registrars and 3.5% by registrars under the supervision of the surgeons during their training period. ERCP was performed by the surgeons of the same unit to manage 6.8% of the cases preoperatively and 2.2% post-operatively.

Intra-operative difficulty or problems was seen in 28.7% , of the cases, which includes adhesions with adjacent organs in 14.9%, difficult identification of Calot's triangle in 3.4%, bile spillage 6.8% and abnormally distended gall bladder, intrahepatic gall bladder, and double gallbladder in 1.2% each.1.2% of the cases needed conversion to open. The drain was placed in 18.3% of the cases. None of the patients had an intraoperative CBD exploration during the primary surgery.

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Multiple stones were noted in 66.7% of the cases whereas single stones in 17.3% and gall bladder polyps in 5.7%. Open para umbilical hernia repair with mesh was done in 9.1% of the cases and Laparoscopic transabdominal preperitoneal inguinal hernia repair with mesh in 1.2% of cases.Figure 3. Intraoperative difficulties in Laparoscopic cholecystectomy

Complications were noted in 20.68% of cases, of which eight were surgical, and 10 were medical problems. Out of those 10.8% had hospital acquired chest infections, 3.6% had abdominal pain and transaminitis, 2.2% had bile leak and needed special intervention with ERCP and pigtail drainage, 2.3% had port site wound infection, 1.2% had drain site infection, and 1.2% had a myocardial infarction. None of the cases had revision surgery

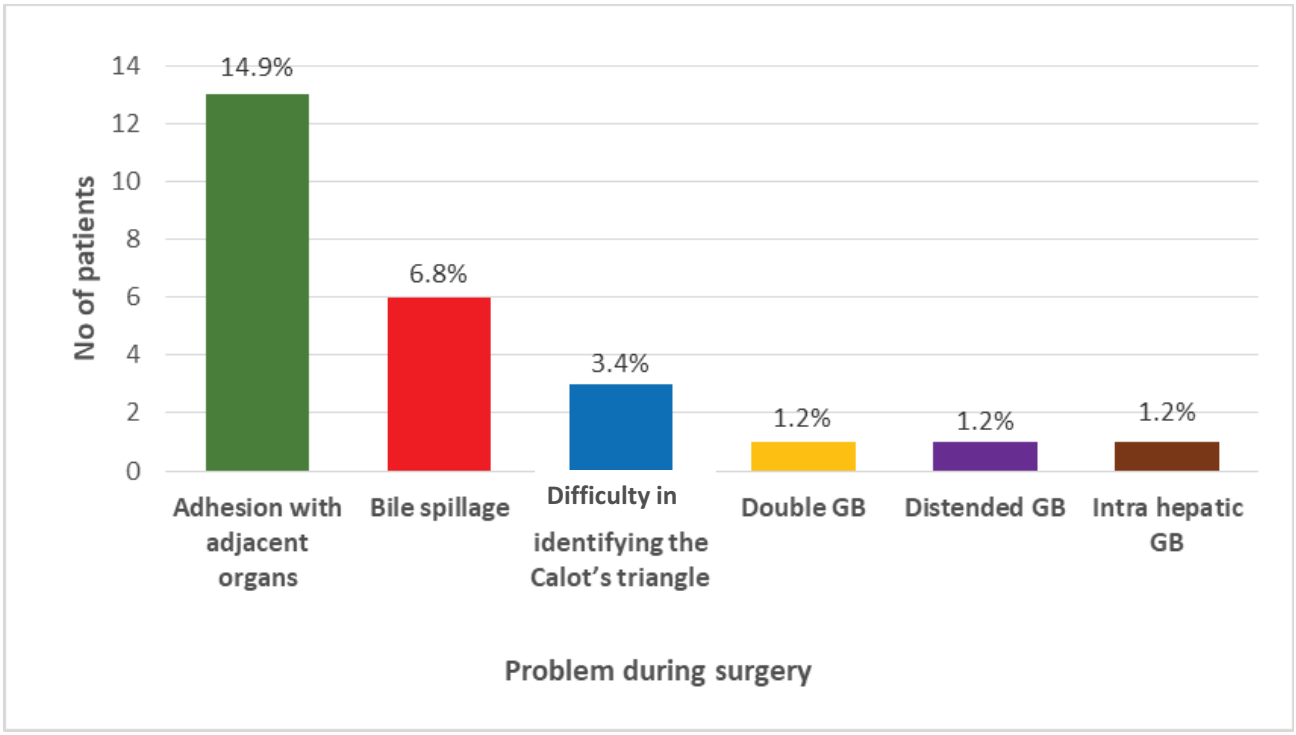

Figure 3. Intraoperative difficulties in Laparoscopic cholecystectomy.

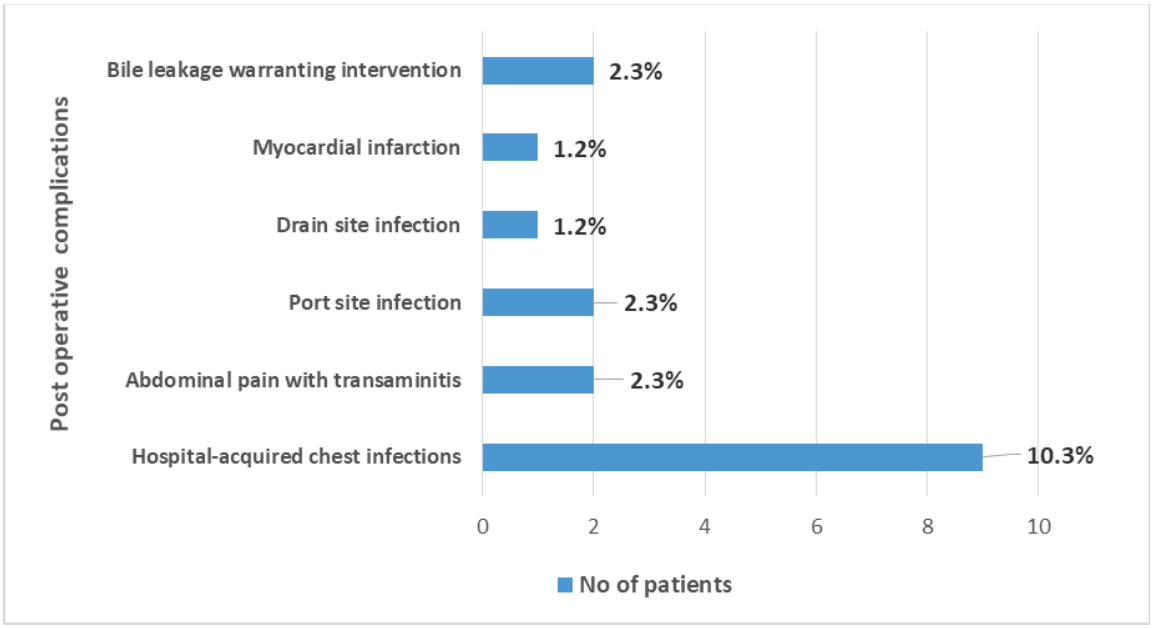

Figure 4. Post operative complications encountered in Laparoscopic cholecystectomy

Discussion

Demographics

Most of the patients operated on were females with a mean age of 51.76± 17.15. Most of the published literature also had the majority of female cases and a mean age group of more than 50 [4-6].

Indications and intraoperative difficulty

The common indication for laparoscopic cholecystectomy in this study was symptomatic gallstone disease. This pattern varies among published literature. Most literature had chronic cholecystitis as the common indication for laparoscopic cholecystectomy [6,9].

Intraoperative difficulty or problems was noted in 21 cases, out of which 16 were to adhesions and difficult Calot's triangle identification. This is described in the literature as the commonest intraoperative difficulty. It is said to be due to scaring and fibrosis due to chronic inflammation [2,4].

Conversion rate

Laparoscopic cholecystectomy warranted conversion to open surgery in certain difficult cases. One patient had a choledoco-duodenal fistula and was converted to open cholecystectomy and repair of the fistula tract. The conversion rate was 1.2%.The conversion rates in the published literature worldwide range from 1.9% to 17% [4-8]. This low conversion rates are associated with skill and experience of the laparoscopic surgeons [4]. The sample size studied in this analysis is only eighty-seven, whereas, in others, it is in multiples of a hundred.

Complications

Complications can be either surgical or medical. Surgical complications could be intra-operative or postoperative. Common operative incidents reported in the literature were haemorrhage, iatrogenic perforation of the gallbladder and common bile duct injuries. Postoperative surgical complications reported in the literature are bile leakage, bleeding, subhepatic abscess and retained bile duct stones [5]. In addition, various medical problems, such as myocardial infarction and hospital-acquired chest infections, can crop up following surgery.

The morbidity and mortality of the complications can be graded using the Clavien–Dindo classification [10]. Two patients with postoperative bile leak warranted guided drainage with pigtail, ERCP, and stenting (grade IIIb). One had a non-ST elevated myocardial infarction and was managed in the medical wards with anticoagulants and antiplatelets (grade II), nine had hospital-acquired chest infections and managed with intravenous and subsequent oral antibiotics without any intervention (grade II), one had port site infection which was managed at the ward with simple drainage and daily dressing (grade 1), Three had abdominal pain and elevated liver enzymes and was managed without any intervention (grade I), and one with drain site infection which was managed with removal of drain and wound dressing (grade I). No single mortality was encountered. The post operative complications of the unit were in line with the international standards.

Concomitant procedures

Open/laparoscopic hernia repair with mesh was done in 10.3% (n=9) of the cases, and none had any complications. Many surgeons perform laparoscopic cholecystectomy safely, along with para umbilical or inguinal hernia repair, without significant postoperative complications, such as surgical site infection warranting mesh removal. It is said that the association of symptomatic gallstone disease with a para umbilical hernia is around 10%, and it is advisable to perform mesh repair concomitantly with laparoscopic cholecystectomy [11,12].

Limitation

The small sample size is a limitation which might be the reason for the low incidence of complications. In addition, limited theatre time and resources and routine theatre closure due to the Covid pandemic further added to the low sample size.

Conclusion

Professorial unit Teaching hospital Jaffna despite its limitation can perform laparoscopic cholecystectomies for various indications meeting international standards as per the available published evidence to date. This shows that any centre anywhere in the world can perform safe laparoscopic cholecystectomy, providing proper training and guidance.

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CASE REPORT

Endoscopic intra gastric balloon placement for obesity: case series of the first five balloons placed in Sri lanka

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Keywords: Obesity, bariatric balloon, BMI, IGB, endotherapy

Introduction

Prevalence of obesity and its complications are increasing worldwide. A similar trend is seen in Sri Lanka during the last decade. In a study conducted among Sri Lankan adults, overweight and obesity were seen in 25.2% and 9.2% respectively[1]. Complications associated with obesity range from simple fatigue to overt cardiovascular disease, chronic liver cell disease and obstructive sleep apnea. Weight loss is the primary treatment for managing and preventing complications associated with obesity. Several weight loss strategies are identified and range from non-invasive interventions to more invasive endoscopic and surgical procedures. Non-invasive methods include dietary changes and increase physical activity, but these unfortunately have not been able to translate to significant and sustainable weight loss and reduction of complications [2]. Recently bariatric surgery has shown promise in effective weight reduction [3]. Although over the last few years the number of bariatric surgeries have increased, only 1.1% of eligible patients underwent bariatric surgery in the US in 2018 [4]. Patients fear of complications, costs involved, and stigma may have contributed to this low number. Bariatric surgery is also generally recommended for class II and III obesity; therefore, a considerable proportion of obese individuals would not become eligible for weight loss surgery. Thus, endoscopic bariatric techniques were developed to bridge this hiatus and even bridge patients for bariatric surgery [5]. Intra gastric balloon placement (IGB) is one such endoscopic bariatric tool used for weight reduction, and unlike surgery can be effectively and safely used in class I and II obesity.[5] These balloons are endoscopically placed as a day procedure. Due to this simple placement technique intra gastric balloons have an advantage over other techniques and are better accepted. Here we describe the first five patients to undergo Endoscopic bariatric balloon placement in Sri Lanka.

Case series

The average age of our patients was 44.2 years (34 – 60) and all patients had an obesity class of II or over. The average percentage loss of weight was 15.96% (10.7-22%) over six months. No major complication was reported by any patient.

Age (years)	Gender	BMI	Obesity class	Comorbidities	Initial BW (Kg)	BW after 6 months (Kg)	% loss of weight
34	Male	43.4	III	None	122.6	95	22
35	Female	34	II	None	84	75	10.7
55	Male	46	III	DM	155.5	130.4	16.4
60	Female	42	III	None	115	100.4	12.6
37	Male	32	II	None	90.4	74	18.1

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IGB placement method

All patients were counselled regarding the procedure and post balloon placement nutritional intake, prior to placement of the balloon. The procedures were performed as a day admission under deep sedation by the 1st author (ANR) of this study. "End-ball®" intra-gastric balloons were used in all five patients. Initially routine endoscopy was performed, and guide wire (0.035 inch, 450cm) placed with the distal flexible tip in the duodenum. The balloon was introduced over the wire into the stomach under direct vision of the endoscope. Whilst the balloon was placed in the stomach it was filled with 400 ml of water mixed with indigo carmine dye. The patient was discharged the same day and followed up by the nutritional team with monitoring of weight and nutritional counselling monthly. Proton pump inhibitors and anti-emetics were prescribed for two weeks post balloon placement. The IGB was kept in the stomach for a period of six months after which it was removed using a standard technique of aspirating the balloon content and withdrawing the balloon orally with a special grasping forceps.

Discussion

Obesity is associated with increased all-cause mortality and contributed to more than 4 billion deaths worldwide in 2015 [6]. How ever unlike many other chronic diseases, obesity management is usually limited to a casual unstructured conversation of the need for lifestyle interventions between a physician and patient during a visit for an unrelated illness. Although important as an intervention, lifestyle modification lacks the efficacy and durability, as a standalone treatment strategy and is associated only with a modest weight loss [7]. Pharmacological treatments are available but reduce weight by only 3-9% compared to lifestyle therapy alone and are also associated with undesirable side effects. [8]

Bariatric surgery has shown great promise as a treatment option for obesity but lacks universal acceptability due to its invasive nature and is underutilized by those who are potentially eligible for surgery (BMI $\geq$35kg/m^{2}or $\geq$30kg/m^2 with comorbidities) [9] Those with less severe obesity are left with limited options to achieve weight loss, despite them contributing higher to the prevalence of obesity related complications. IGB insertion is widely accepted as a bariatric therapy for class I and II obesity. [10] It's relatively simple, reversible, cost effective and repeatable as a technique and helps patients initiate a weight loss program, and can even bridge to a more durable treatment option like surgery. These advantages over the other available techniques, allows IGB to be used by a larger segment of the obese population especially those with lower classes of obesity.

The technique of weight loss appears to work in two methods: a restrictive pathophysiology by the introduction of a space occupying device and by triggering early satiety by stimulation of gastric mechanoreceptors resulting in vagal signals to the brain [11] It is well accepted that IGB induces a weight loss of up to 20% over 6-month period. In our case series the average weight loss was 15.96% (10.7-22%) over six months.

As described in the literature and seen in our patents nausea and vomiting is frequently seen during the initial few days of balloon placement.[12] Antiemetic drugs given prophylactically during this initial period helps tolerance of the IGB. Proton pump inhibitors should also be prescribed to protect the gastric mucosa and minimize gastro esophageal reflux symptoms. More serious adverse effects of IGB included gastrointestinal bleeding due to gastric ulcer, perforation, and small-intestinal obstruction secondary to spontaneous deflation of the balloon. [8] [13][14] None of these serious side effects were seen in our patient while the balloon was in situ. Although IGBs are an attractive intermediate option between, diet, exercise and bariatric surgery; many unanswered clinical questions remain regarding its overall long-term safety, tolerability, and sustainable weight loss.

In conclusion, IGB therapy with moderate- to high-intensity lifestyle therapy is an attractive weight loss strategy over lifestyle interventions alone, for those not meeting criteria for bariatric surgery. As clinicians, we need to be aware of the different weight loss strategies, the benefits and limitations and individualize these treatments for each obese person and utilize the available treatment strategies effectively.

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Learning Points:

- Endo bariatric balloons are a safe and effective method to loose weight in patients who are in early classes of obesity.
- It can also be used as a bridge to more definitive Bariatric surgeries.
- Weight loss is mainly due to the restrictive effects supported by early satiety due to Neuro hormonal stimulation of the balloon.

CASE REPORT

Modified circumumbilical approach for duodenal atresia repair : a scarless surgery

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Keywords: Duodenal atresia, transumbilical approach, duodenojejunostomy

Introduction

Duodenal atresia is a common congenital anomaly which require surgery during neonatal period to reestablish the intestinal continuity. Transverse upper abdominal incision and use of laparoscopy have been widely described for duodenal atresia repair. In this report, we describe an alternative approach for duodenal atresia repair via a modified circumumbilical incision. This approach has been reported to be comparable with transverse incision for a neonatal laparotomy including for duodenal atresia surgery.

Case report

The boy was born via elective lower section caesarean section (ELLSCS) at 32 weeks with birth weight of 1.5kg for fetal compromise due to abnormal Doppler signals (absent end diastolic flow). Antenatal scans at 24 weeks found a "double bubble" sign. Baby was born vigorous with good Apgar score. Abdominal radiograph confirmed the presence of double bubble sign suggestive of duodenal atresia. He was kept nil by mouth and had umbilical venous catheter (UVC) insertion on the first day of life for a total parenteral nutrition. At day 2 of life, he had a fleshy lump at the base of umbilical stump with some yellowish stained and presumed to be a persistent vitello-intestinal duct. He was transferred to our center and ultrasound abdomen showed an umbilical hernia with bowel content. The umbilical lump appeared swollen and congested on the next day. With a suspicion of incarceration of umbilical hernia, he was brought to theater for umbilical exploration. A circumumbilical incision was performed and noted to have a herniated omentum through a 1cm umbilical defect (Figure 1). A midline extension over the linea alba was made for a full exploratory laparotomy. Omentectomy was performed, followed by kocherization of duodenum and subsequently underwent duodenojejunostomy with transanastomotic (TA) tube insertion. Postoperatively, the recovery was uneventful. Feeding was started through TA tube and progressed to full feed within a week. At 2 weeks post-surgery, the wound well healed and abdomen appeared scarless except for the gastrostomy site for TA tube (Figure 2) and he was sent home well.

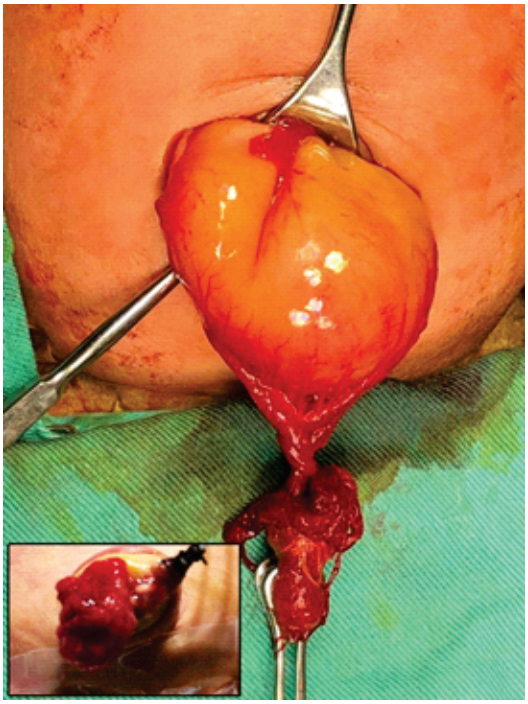

Figure 1. The circumbilical incision allows exterioration of stomach and omentum. The herniated omentum was clamped with Babcock clamp, comparable to its appearance before surgery (as shown in the small box)

Discussion

Gastrointestinal anomalies of the bowel can impact various parts of digestive system. Duodenal atresia is a congenital defect characterized by a abnormal narrow either partial or complete obstruction of the duodenum. This condition occurs in 1 in 10000 live births, affecting boy more frequently.[1] Surgery is the definite treatment aimed at to restoring the normal flow continuity to enable feeding.

Historically, pediatric surgeons have been using the large transverse incision to access the abdomen for duodenal

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atresia repair resulting a big scar that grows which may become cosmetically unattractive. A laparoscopic technique also makes it a possible option for surgical intervention via a smaller incision, but the approach is often associated with an longer operative time, more expensive cost, and a significant steep learning curve.[2] A circumumbilical incision is another attractive option for neonatal laparotomy. It was first reported by Tan and Bianchi in 1986 for pyloromyotomy.[3] This is a common technique among the pediatric fraternity for certain intrabdominal diseases and was found to be feasible, safe, inexpensive, and virtually scarless.[4] Soutter and Askew were the first to report the technique of circumumbilical incision to perform various neonatal surgery including duodenal atresia and stenosis in 2003.[4]

Duodenal atresia repair have 3 surgical anastomosis variants including: duodeno-jejunostomy(DJ) (1916), gastro-jejunostomy(GJ) (1924), and duodeno-duodenostomy(DD) (1943).[5] DJ was the first type of repair performed and considered the procedure of choice for many years.[5] GJ repair technique was not preferred because of the risk of ulceration and malignant transformation due to bilious and pancreatic reflux. DD with a diamond-shaped configuration was described by Kimura et al, which allowed a wider anastomosis for earlier transit of intestinal contents.[5] Most pediatric surgeons prefer DD, because it is more physiological than DJ. However, surgeons may still perform DJ if the anatomy variant, the birth weight and age of the patient did not suit for DD like in case of preterm birth as in our case. Up till today there is no literature to suggest that one technique is more superior to the other.[6]

Our patient, was known to have duodenal atresia, had abnormal umbilical lesion suspicious of umbilical hernia. Presumably a perforated congenital hernia of umbilical cord, we decided to explore through the umbilicus. Circumumbilical incision is not a routine practice in our center, however the incision was made for the umbilical lesion as it allows to explore the content and with the intention to perform repair and DJ in this patient. Indeed, this approach found to be attractive as it allows surgery to be done comparable to traditional upper transverse abdominal incision with much smaller wound and thus minimal scar formation. However long-term outcome is yet to be uncertain.

This approach is well-suited for operating on the infant's abdomen due to its natural anatomical characteristics. The abdomen of an infant has a limited lengthwise dimension, a relatively thin and flexible abdominal wall, and a comparatively large umbilicus. By manipulating the flexible abdominal wall of the infant, the surgical incision can be positioned precisely over the desired area, without the need to extend it extensively to access distant parts of the abdomen. The elasticity of the skin allows for pulling out the entire bowel, freeing the ascending colon from the retroperitoneum, mobilizing the duodenum, and performing a anastomosis within the surgical field. However, it's important to note that compared to the transverse abdominal or laparoscopic approach, this method has limitations in terms of exploration capability. Additionally, the small opening may pose challenges in accessing organs or masses located outside the peritoneal cavity. Therefore, this approach is recommended only when there is a clear preoperative diagnosis.

Figure 2: 2 weeks post-surgery, the abdomen appeared scarless except for small scar TA tube wound (as shown with arrow)

Conclusion

The modified circumumbilical approach is an attractive alternative to transverse incision and minimally invasive surgery for a duodenal atresia repair. Apart from cosmetically superior to open operation or even laparoscopy, this approach is safe, feasible and does not require extra equipment or significant learning curve.

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Learning Points:

- Approach option in approach to duodenel at resia repair can range from small circumbilical to laparoscopic depending on patients size and birthweight
- Circumbilical is an attractive option, but any surgery is always about exposure and control

CASE REPORT

Open thrombectomy for acute superior mesenteric vein thrombosis secondary to iatrogenic vein injury. A case report and review of literature

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Keywords: Mesenteric vein thrombosis, open thrombectomy, bowel gangrene, management of mesenteric vein thrombosis, outcome of mesenteric vein thrombosis

Introduction

Iatrogenic mesenteric vein thrombosis (MVT), following SMV injury during intra-abdominal surgery resulting in acute intestinal ischaemia is rare (5- 15%). MVT results in venous gangrene of the bowel. MVT is associated with a very high mortality (1).

With early diagnosis and appropriate intervention, the bowel gangrene and the mortality can be reduced. The guidelines for optimal management for MVT are lacking due to the rarity of acute MVT following injuries to the Superior Mesenteric Vein (SMV) during surgery and delay in diagnosis of MVT. This case report describes a patient who developed superior mesenteric vein thrombosis following laparoscopic right hemi colectomy and injury to the SMV due to avulsion of the middle colic vein. She was managed successfully with open thrombectomy and SMV repair.

Case

A 59-year-old female underwent laparoscopic right hemi colectomy. During colonic mobilisation bleeding was encountered at the root of the mesentery due to avulsion of the middle colic vein. Procedure was converted to laparotomy and the haemostasis was achieved with difficulty by suture ligation. The colectomy was completed. An end-to-end distal ileum to transverse colon anastomosis was done. Towards the end of the surgery dusky discoloration of the distal end of the ileum was noted. However the small intestine was well perfused with visible pulsation of the terminal branches of the mesenteric artery at the intestinal border of the mesentery. Peristalsis was present. Therefore, no further action was taken and the abdomen was closed.

About 6 hours after the surgery the patient became haemodynamically unstable with increasing need for inotropes and the serum lactate level was rising (serum lactate level was 7.9 mmol/l on arterial blood gas analysis- normal range 0.5 to 1.3). There was large amount of blood-stained drainage (1130 ml in the first 2 hours) from the abdominal drain. A decision was taken to perform an urgent relaparotomy suspecting a reactionary haemorrhage. At the relaparotomy, the whole length of the small intestine other than the initial few centimetres of the jejunum was found to be dark red in colour with absent peristalsis (Figure 01). On further exploration the mesenteric vein was found to be thrombosed at the site of middle colic vein injury.

Superior mesenteric vein (SMV) was mobilised proximally and distally. Proximal and distal control was achieved. A bolus dose of unfractionated heparin (100u/kg) was administered. The SMV wall was found to be lacerated due to avulsion of middle colic vein from its junction with the SMV (Figure 02). The haemostatic sutures applied during the initial surgery were found to be constricting the vein. The previously applied sutures were removed. Thrombectomy was done. The lacerated venous edges were trimmed. The defect was repaired with 6/0 polypropylene sutures transversely. The venous flow was re-established. Following thrombectomy and venous wall repair, the jejunum and the proximal ileum returned to normal colour (Figure 03). Peristalsis reappeared. The arterial pulsation was noticed in the terminal branches of the superior mesenteric artery. The colour of the distal ileum did not improve. Therefore the ileocolic anastomosis was disconnected and the distal end of the ileum was resected. The end of the ileum and the transverse colon were brought out as two separate stomas on either side of the midline incision. Following the surgery the lactate level returned to normal level gradually. The ileostomy started to function, the colour of the stoma was normal. At present the patient has been recovering slowly and being maintained with parenteral feeding. The patient was started on oral anticoagulation.

Discussion and conclusion

Mesenteric vein thrombosis resulting in bowel ischemia, occurring as a result of iatrogenic injury is rare and difficult to diagnose in the immediate postoperative period. However it is

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a very serious complication associated with a very high mortality in the past ranging from 12.5% to 50% (1) (2) (3) (4). However the mortality reported in recent series were lower ranging from 5% to 15% (5) (6).

The Superior Mesenteric vein (SMV) drains blood from the duodenum, jejunum and ileum. In addition it also drains blood from the caecum, the ascending colon and the right 2/3 of the transverse colon. In addition the large bowel and the duodenum have alternative venous drainage pathways through the inferior mesenteric and portal vein tributaries. The SMV joins the splenic vein posterior to the neck of the pancreas to form the portal vein, which eventually drains into the liver. MVT usually leads to distal jejunal and ileal infarction and gangrene, perforation, sepsis and finally death. In addition the patient can develop short bowel syndrome as a result of extensive bowel resection. The large bowel and the duodenum are usually spared because of the alternative venous drainage.

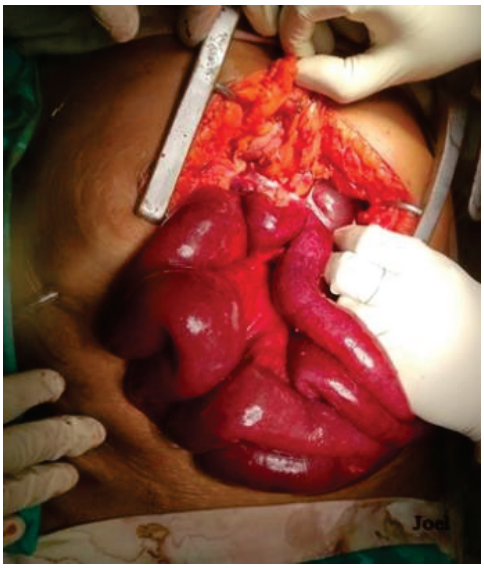

Figure 1. Image showing congested small bowel

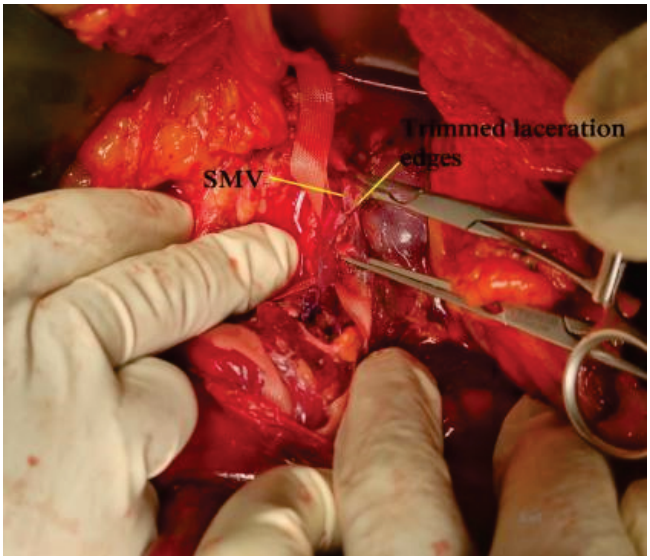

Figure 2. Image showing damaged wall of the superior mesenteric vein

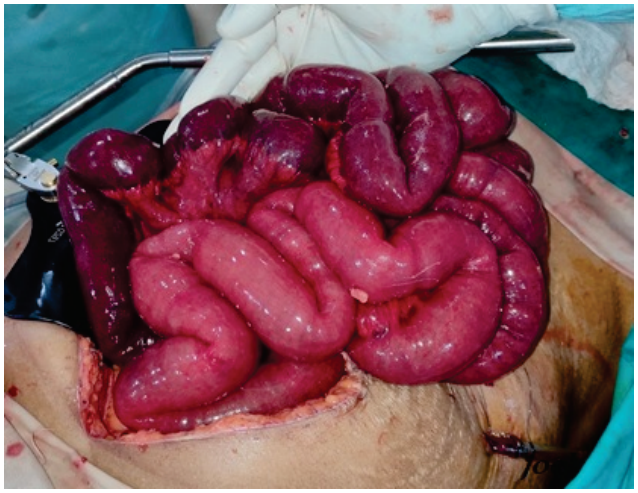

Figure 3. Image showing the recovery in congestion of the small bowel after thrombectomy

Causes of mesenteric venous thrombosis following surgeries include, iatrogenic (due to venous wall injury, and accidental ligation of the vein as in the case above) and due to other postoperative factors. The commonest surgeries associated with MVT are, pancreatectomy and splenectomy. In addition the risk of MVT also increases with peritoneal inflammation and peritonitis occurring as a result of intra-abdominal surgeries.

Following accidental ligation of the vein as in the current case, the resulting stagnation to the flow leads to MVT. Stagnation also occurs following splenectomy.

Local factors like venous wall injury e.g. during pancreatectomy and splenectomy generally leads to proximal MVT, whereas other factors i.e. peritonitis, leads to small tributary vein thrombosis (7).

When mesenteric vein thrombosis occurs there will be stagnation and increased hydrostatic pressure at the venous end of the capillaries. This will lead to leakage of fluid through the capillary wall into the interstitial space of the bowel wall. This results in bowel wall edema. In addition due to increased venous end pressure at the capillaries, there will be reduced perfusion pressure to the bowel wall resulting in ischemia and necrosis leading to bowel wall gangrene.

Clinical features depend on the acuity of the onset and the

extent of the thrombosis. Abdominal pain is a common feature. However during the immediate postoperative period like in the patient described above, recognising the pain due to the MVT is difficult. The patient also develops increased blood stained fluid drainage due to bowel wall oedema and congestion as in this patient.

If the diagnosis is missed in the initial period, bowel gangrene results. There will be acidosis with a rise in the serum lactate level and leucocytosis (white cell count of more than 20000 /mm^3) (8) (9). Eventually the patient develops bowel perforation, peritonitis and sepsis with multi organ failure. Finally the death results (7).

In postoperative MVT, as in the case described above, the patient also develops tachycardia. If there is a small intestinal stoma, the stoma effluent will be heavily blood stained. There will be a bluish discoloration of the stoma mucosa.

Imaging is used to confirm the diagnosis and to assess the extent of the thrombosis. Imaging is also used to assess the complications of the mesenteric vein thrombosis e.g. bowel gangrene. The main imaging modalities available are ultrasound scan (USS) and Computerised tomography (CT).

Ultrasound scan with Doppler will confirm the presence of thrombus. But USS is not suitable to assess the extent of the thrombosis. In addition USS will not adequately demonstrate the bowel complications. In addition during the postoperative period it is difficult to perform a USS.

Contrast enhanced CT angiography in portal venous phase (70s delay) is done to confirm the diagnosis. The CT scan has a sensitivity of 90%. If mesenteric vein thrombosis is suspected there CT scan should be done immediately (10). The CT appearances include filling defects in the lumen of the SMV, dilatation proximal to the occluded vein, bowel wall edema resulting in "halo sign" or "target sign", oedema of the mesentery (mesenteric fat stranding) (11) and altered bowel wall enhancement (12). If there are any doubts about bowel wall gangrene, urgent laparoscopic assessment should be performed.

In all patients with acute MVT, intravenous heparin infusion should be started immediately, with a bolus dose of 100 IU per kg intravenously followed by 18U per kg per hour intravenous infusion. The activated partial thromboplastin time (APTT) is maintained at twice the normal range. Early anticoagulation is shown to improve the outcome and it also facilitates recanalisation of the vein. Studies have shown that early anticoagulation results in 61% to 80% recanalisation rate in cases of acute MVT (13) (14). Subsequently the patients are converted to oral anticoagulants i.e. Warfarin. Warfarin is continued for 6 months if there are no further risk factors for recurrence as in the case described above (13). The international normalised ratio (INR) is maintained in between 2 to 3 while on warfarin.

The patients with bowel gangrene should be prepared for emergency laparotomy. At laparotomy the extent of the bowel gangrene and the presence of thrombosis in the mesenteric vein are confirmed. When abdominal exploration is done early as in the above described case, open thrombectomy should be attempted. Open thrombectomy is effective in removing large amount of thrombus. Only few series reported the outcome of open thrombectomy. In one series of mesenteric vein thrombosis, the mortality was less in patients who underwent thrombectomy and bowel resection than in patients who underwent bowel resection alone (15).

Endovascular options include catheter-directed administration of thrombolytic agents (e.g. tissue plasminogen activator (TPA) and Streptokinase) and mechanical thrombectomy. In catheter-directed administration of thrombolytic agents the thrombolytic agent is injected via a catheter either into the superior mesenteric artery (indirect lysis) or into the superior mesenteric vein (direct lysis).

To access the SMV, the catheter is inserted through the internal Jugular vein into the hepatic veins. Then it is directed through trans-hepatic route into the portal vein and subsequently into the SMV. Studies have shown good outcomes with direct thrombolysis. In one study done among 20 patients with superior mesenteric vein thrombosis, 15 (75%) had either complete or partial resolution of the thrombus. The major complications reported in this study were gastrointestinal haemorrhage and septic shock (16). Similarly in another study among 12 patients with superior mesenteric vein thrombosis, 7 (58.3%) had either complete or partial resolution of thrombus. This study also reported a 50% major haemorrhagic event (17).

Catheter-directed injection of thrombolytic agents into the artery (indirect lysis) is aimed at achieving the thrombolysis in the small venules. But it is less effective compared to direct injection into the vein. The reason being that the thrombolytic agent may pass through the collateral veins bypassing the thrombosed venules. This results in sub-optimal thrombolysis. Therefore a larger dose of thrombolytic agent and longer duration of infusion is needed to achieve thrombolysis (18).

Mechanical thrombectomy can be attempted in patients who have contra indications to the thrombolytic agents e.g. in the immediate postoperative period like the patient described above. The results for the above method is lacking.

Endovascular options are indicated in patients who remain symptomatic after 48 to 72 hours of anticoagulation, in patients with worsening abdominal signs and in patients who are not fit for surgical interventions. But in the patient described above endovascular options were not attempted due to non-availability and the patient's condition required and open surgery due to the presence of large volume of blood stained drainage.

Therefore in a patient with mesenteric vein thrombosis, if the patient is subjected to laparotomy i.e. for bowel resection, open thrombectomy should also be attempted as in the case described above. However the current tendency in local setting is to do only bowel resection and not attempting open thrombectomy. However the evidence suggests that performing thrombectomy at the time of surgery will reduce the length of bowel resection. In addition venous thrombectomy will also result in better patient out-come (15).

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Learning Points:

- Acute mesenteric vein thrombosis(MVT) is difficult to diagnose in the immediate postoperative period. Therefore high degree of suspicion is required.
- During exploration for acute MVT if confirmed, open thrombectomy should be done to reduce the length of bowel gangrene.
- Following resection for bowel gangrene caused by acute MVT, primary bowel anastomosis is avoided, and a relook laparotomy is advised

CASE REPORT

Body packing with pyloric stenosis successfully treated with open pack retrieval and gastric bypass

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Keywords: Foreign body, body packing,

Introduction

Foreign body ingestion unintentionally or intentionally in adults are not uncommon on the contrary to children. Intentional ingestion of illicit drugs or tobacco/drug pack is one common reason other than psychosis. Infrequently, body packing may end up with bowel obstruction with 'drug pack' impacted at various constriction point of gastrointestinal tract [1]. Here, we report a case of intentional foreign body ingestion by a jail inmate whom unfortunately also has pyloric stenosis. The clinic presentations and treatment strategy are discussed.

Case Presentation

A 24-year-old gentleman presented with abdominal pain for 5 days associated with abdominal distention, vomiting and reduce oral intake. He also revealed that he had history of ingesting tobacco packs a month ago which he did not observe it passing out on his motion. Clinical examination revealed that the abdomen is scaphoid, there was mild tenderness over the epigastric area. White cell counts, haemoglobin, platelet count and renal profile were within normal limit. Contrast enhanced computed tomography (CT) scan of the abdomen revealed that there were at least 9 well defined oval shaped material seen within the stomach until the pylorus (Figure 1). Esophagogastroduodenoscopy (EGD) assessment revealed multiple tobacco packs (Figure 2). Endoscopic retrieval was successful to remove only a single pack but was abandoned as there were too many packs, which logically thought to be time consuming and carries additional risk of aspiration. An emergency laparotomy was performed to remove all the tobacco packs safely. Intraoperatively, there were 9 additional tobacco packs removed (Figure 3). We observed associated pyloric stenosis which explained the reason of impaction at stomach. We performed an antecolic gastrojejunostomy bypass with anterior gastrostomy opening. Post operative recovery was uneventful and he could tolerate normal diet.

Discussion

Treatment strategy for current case is guided by accurate localization, size and configuration of foreign body ingested with computed tomography imaging and endoscopic assessment, concordant with previous literature [2]. Both of these modalities were commonly embarked for precise pre-interventional assessment. However, ESGE only recommend CT scan in patients with suspected perforation or complications that may require surgery. Abdominal radiography was recommended if ingestion of a radiopaque

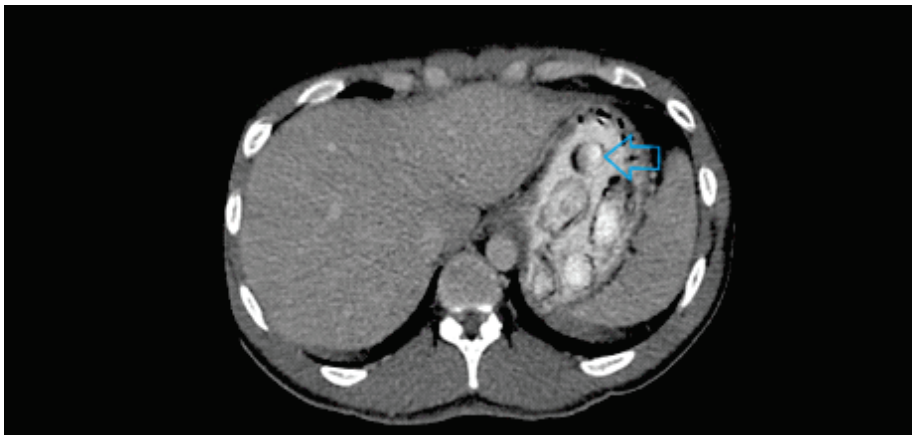

Figure 1. Contrast CT in axial plane shows numerous foreign bodies in stomach (arrow head)

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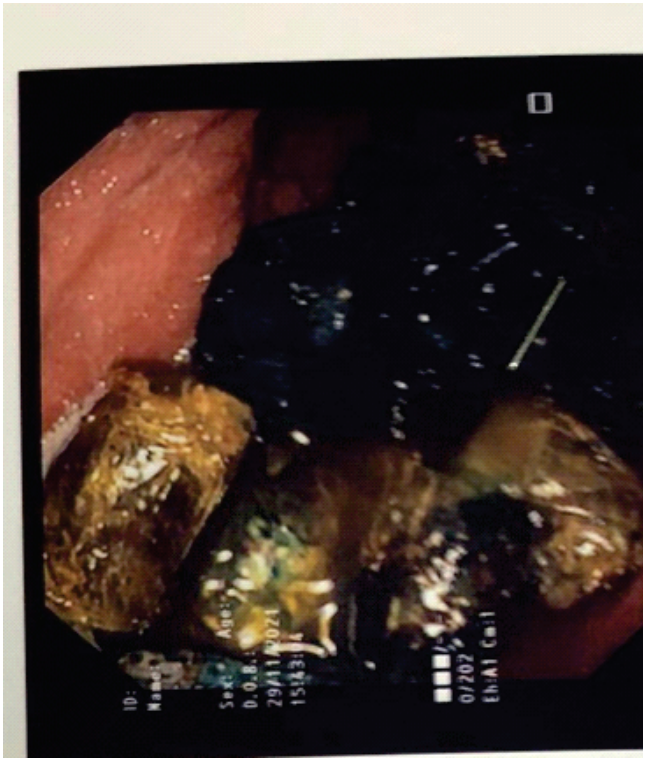

Figure 2. Esophagogastroduodenoscopy (EGD) assessment revealed multiple tobacco packs

Figure 3. : Intraoperative retrieval of tobacco packs

object and no imaging if non bony food bolus with no complication. With regards to endoscopy measures, it is often accompanied with therapeutic intention. European and American guideline recommend against routine use of endoscopy in asymptomatic small and blunt foreign body, as clinical observation may suffice [3]. However, early use is recommended for the symptomatic ones or hazardous foreign body such as batteries/magnet/sharps objects. Timing of intervention varies depending on degree of obstruction, configuration and type of the object. Sharps and batteries or complete oesophageal obstruction requires emergency endoscopy less than 6 hours [3]. As for body packing, ESGE also recommend against endoscopy retrieval [3]. The guideline encourages surgical referral with suspected packet rupture, failure of packets to progress or intestinal obstruction. In aforementioned case, the man had single packet removed with endoscopic attempt. That was a curious attempt. Judging by the numbers and size of the packs, continued efforts for endoscopy retrieval was deemed with potential risk of aspiration, oesophageal injuries and there is a possibility of the packet to rupture which may pose unpredictable toxic effect with questionable lethality. We opted for a safer and quicker approach of open gastrostomy removal. In the current case, there are multiple packets with symptoms of gastric outlet obstruction, wait and watch approach for was not feasible. Nonetheless, this approach is preferred and recommended in ESGE guideline. Current case we did not embark on distal gastrectomy as we anticipate difficulty at duodenal dissection with scarring over pylorus. As the man presented in an emergency manner, the physiological and nutritional state was deemed safer with a gastric bypass alone to solve the issue of pyloric stenosis.

Conclusion

Body packing impacted at pylorus is uncommon. This pattern of impaction shall raise the suspicion of associated pyloric stenosis due to recalcitrant ulcer. Accurate localization, size, and configuration allows precise decision making for best treatment option. Endoscopy carries risk of aspiration and injuries to the oesophageal passage. Open surgery may serve as better option for safety and efficacy reasons, especially when one has a good anaesthetic risk.

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Learning Points:

- AForeign Body ingestion in adults is becoming common in today's modern world.
- In a case of body packing, use of endoscopy retrieval of the foreign body is not advised as there is a risk of rupturing the content which can be detrimental to health.
- In regards to endoscopy, clinical observation is sufficient for small and blunt foreign body which is usually asymptomatic.

CASE REPORT

Deltopectoral flap reconstruction with primary repair in a patient with cutaneous neck metastasis of thyroid cancer; a case report

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Keywords: Deltopectoral flap, reconstruction, papillary thyroid carcinoma, cutaneous metastasis

Introduction

The deltopectoral flap (DP flap) is the most commonly used fasciocutaneous [1], transpositional and axial flap, first described in 1917 Aymard for nose reconstruction. It was reintroduced by Bakamjian(1965) for pharyngoesophageal reconstruction [2].

Cutaneous metastasis of papillary thyroid carcinoma is rare. The reported prevalence of cutaneous manifestations was 0.06 - 0.82% [3]. The majority of metastatic skin lesions of papillary thyroid carcinoma involves the scalp(approximately two thirds), the remainder generally involve the head and neck region [4].

Here we report a case of a patient presenting with a cutaneous neck metastasis of papillary thyroid cancer after eight years of index surgery. He underwent wide local excision and deltopectoral flap reconstruction.

Case presentation

A 65 year old male who underwent a total thyroidectomy in 2013 for papillary thyroid carcinoma, presented with a painless lump over the left root of neck for six months. The lump enlarged rapidly without significant pressure symptoms. Adjuvant radio-iodine therapy was completed. On examination, an approximately 8cm diameter, firm, hemispherical lump over the left anterior root of the neck extended to the upper chest. It was laying in the subcutaneous tissue plane but not attached to the deep structures.

CT revealed a well defined heterogeneously enhancing, subcutaneous soft tissue lesion in the left side of the neck measuring 8.3cm(Tr)*5.5cm(AP)*7.4cm(CC) (Figure 1). It was seen anterior to the left sternocleidomastoid muscle and clavicle, extending superiorly up to the level of thyroid cartilage, medially to the midline and inferiorly to the level of sternum. Significant neovascularization noted around the lesion without perilesional fat stranding. The fat plane between the lesion and the sternocleidomastoid muscle was obscured. There was no evidence of local lymphatic and lung/bone metastasis. Thyroglobulin was very high at 3347 ng/ml suggestive of recurrence.Fine needle aspiration cytology confirmed the recurrence of thyroid papillary carcinoma.

Wide local excision(WLE) of the lump and reconstruction of the skin defect using either the deltopectoral flap, the pectoralis major myocutaneous flap or the latissimus dorsi flap and free flaps were planned at a multi disciplinary team meeting. Ultimately, the deltopectoral flap was considered. Pulsations of 2nd, 3rd and 4th perforator arteries were confirmed by doppler preoperatively.

WLE of lump with adequate skin margins was performed. A deltopectoral fasciocutaneous flap designed and elevated along with the 2nd, 3rd and 4th perforator arteries. Bleeding from the distal edge of the flap was enough to confirm the blood supply of the flap, despite sacrificing the branch of thoracoacromial artery. The direct closure of the surgical wound and the donor site in the setting of the DP flap using suction drains and without a skin graft was performed (Figure 2).

Post operative period was uneventful. The histopathology was reported as a cutaneous metastatic deposit of a papillary thyroid carcinoma with complete resection margins.

The patient was referred to an oncologist for adjuvant radioiodine therapy and planned to observe for recurrences and metastasis. The range of movements of the left shoulder was improved with physiotherapy and no scar contracture developed around the flap (Figure 3).

Discussion

Papillary thyroid carcinoma is the most common subtype of thyroid cancer, rarely metastasis to the skin. Several mechanisms for development of metastatic skin deposits have

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been proposed; direct extension, hematogenous and lymphatic spread and the implantation of cells during biopsy or surgery [5]. Cutaneous metastasis of thyroid cancer usually presents as slow growing dermal nodules or plaques whereas in our case a painless subcutaneous lump appeared in the root of the neck over the period of six months. It is surprising that the metastasis presented eight years after the primary surgery for papillary thyroid cancer even after completion of radio-iodine therapy.

Wide local excision of metastatic skin lesion followed by radioactive iodine therapy was planned. The deltopectoral flap is considered as the first choice in most cases of advanced thyroid surgeries, unless the defect is too large [6]. Therefore a large skin defect as seen in our patient deltopectoral flap cover is preferred.

The flap is rectangular in shape and transfers the skin from the deltoid and thoracic region. It relies on the blood supply of the 2nd , 3rd and 4th intercostal perforators of the internal thoracic artery, usually requiring skin grafting to the donor site.

The DP flap is considered over the pectoral myocutaneous flap and the latissimus dorsi flap because of its unique design and vascularity best suit for our patient. It is thin, pliable and has excellent colour & texture matching with the head and neck area. The flap vascularity enables quick and easy harvest. Thus the DP flap minimizes the donor site morbidity and improves the cosmetic outcome of both donor and recipient sites.

Skin grafting usually requires donor site coverage but in our case the donor site managed with advancement of surrounding flaps. We prevented the distal flap necrosis by tension free flap reconstruction.

Therefore the DP flap is considered a first choice in most cases of skin defect caused by radical surgeries for the treatment of thyroid cancer. Despite the advancement of microsurgery, we have found the deltopectoral flap to be very useful in patients who require reconstruction of the lower face or neck region. It is necessary to confirm the survival of 2nd intercostal perforator artery, which is the most important nutrient vessel of the DP flap by doppler preoperatively as well as presence of bleeding from the distal edge of flap intraoperatively.

Conclusion

We found the effectiveness of using the delt opect oral flap is a reconstructive option for patients with thyroid cancer who undergo radical surgery, resulting in skin defect. This flap does not always require skin grafting to the donor site.

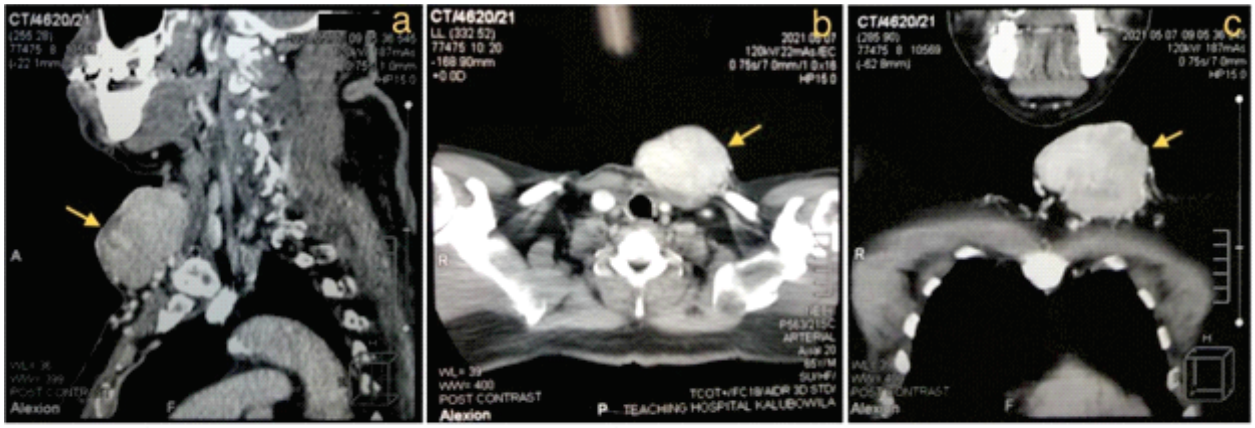

Figure 1: CT images (a) sagittal, (b) axial and (c) coronal sections of the neck region; arrows showing the lump.

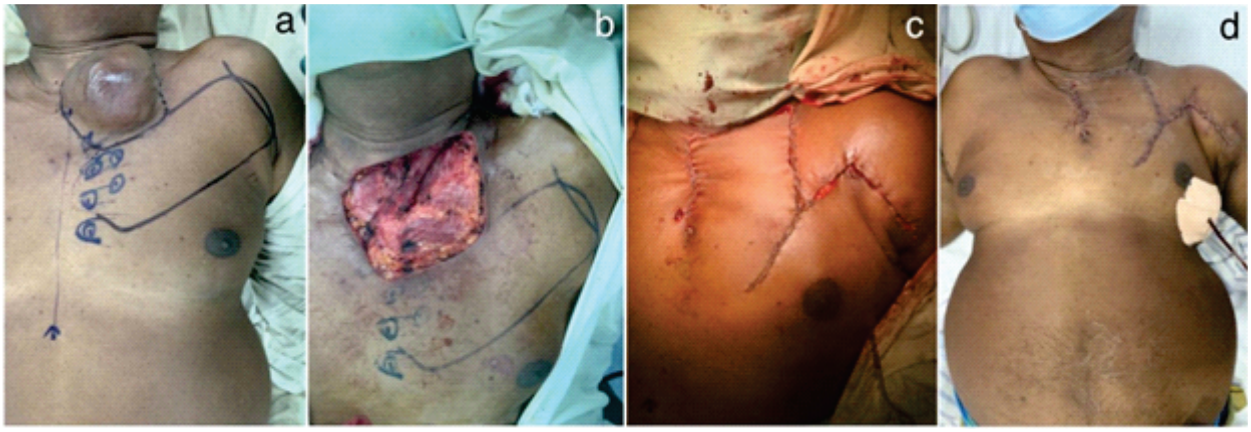

Figure 2: tographs of wide local excision(WLE) of lump and deltopectoral flap reconstruction; (a) The flap design and landmarks were drawn on the patient's skin. 2nd, 3rd and 4th perforator intercostal arteries were marked using doppler stethoscope. (b) Surgical wound following WLE of the lump. (c),(d)Final outcome of the patient. The donor site of the flap was closed directly by undermining the wound edges of the incision. Suction drains were fixed without air leak.

Figure 3: A photograph of the outcome of the patient at postoperative three months

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Learning Points:

- Metastatic manifestations of papillary thyroid cancer are possible several years after the primary surgery and adjuvant therapy therefore proper surveillance and prompt diagnosis of metastasis and recurrences are necessary.
- Although there are several mechanisms for metastasis of thyroid cancer; Implantation of cells during biopsy or surgery would be the possible explanation in this case.
- Deltopectoral flap as a reconstructive option for radical thyroid cancer surgeries in Onco-plastic and general surgeons armamentarium.
- Skin grafting to the donor site is not always necessary for deltopectoral flaps, hence the method of reconstruction should always be decided on an individual basis.