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Fine needle aspiration cytology in management of chronic salivary gland swellings

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Abstract
Neoplasms of salivary gland are an interesting diverse group of tumours. They form a fascinating subject for the head and neck surgeons. The relative infrequency combined with considerable histological and behavioral diversities and their regional anatomic relationship make them unusually interesting and challenging. The material of the study was obtained from 129 patients who underwent fine needle aspiration of the salivary glands during the period of two years. The smears were collected in the cytology laboratory. Medical College hospital. The clinical details were collected directly from the patients. The study confines itself to patients above the age of 12 years. The FNAC smear of the case diagnosed as carcinoma in pleomorphic adenoma showed large cell clusters having pleomorphism and vesicular nuclei with prominent nucleoli. The FNAC smear of the case diagnosed as chronic sialadenitis showed a cluster or lymphocytes and polymorphs.

Keywords: Fine needle aspiration cytology, Management, Chronic salivary gland swellings

Introduction
The salivary gland possesses a number of diagnostic and therapeutic problems due to its varied presentation, biological activity. One to Three cases of salivary gland swelling are admitted in our institution per week. Histopathological analysis had been revolutionized by the introduction of Fine needle aspiration cytology.

Now FNAC has replaced open biopsy because it is more acceptable to the patient surgeon and the pathologist. It is very easy, reliable and it has low morbidity, low coast, low incidence of complications [1].

Neoplasms of salivary gland are an interesting diverse group of tumours. They form a fascinating subject for the head and neck surgeons. The relative infrequency combined with considerable histological and behavioral diversities and their regional anatomic relationship make them unusually interesting and challenging.

Diagnostic difficulties and anatomic relations complicate the management. Surgery is the prime mode of treatment. Radiation and Chemotherapy play a significant role in the control and palliation of malignant tumours of the salivary glands. Hence a definite pre-operative diagnosis will help the surgeon to plan the management of the patient more effectively.

The credibility of FNAC depends on the technique of obtaining smears and accuracy of interpretation. The former requires special skills and the latter depends on the experience of the cytopathologist [2].

Salivary gland tumours comprise less than 3% of all neoplasms of head and neck region and no more than 1% of all neoplasms. Approximately 80-85% of all salivary gland neoplasms occurs in the parotid gland. Although 80% of these are considered benign, earlier reports indicated a high recurrence rate after limited excision. This has lead to a more aggressive approach to the treatment of these lesions in the recent years in the form of either subtotal or total conservative parotidectomy with excellent results.

The present study is an attempt to assess the diagnostic accuracy of FNAC and its role in changing the treatment of salivary gland lesions seen in patients at Medical College Hospital, Trivandrum.

The word parotid is derived from two Greek words meaning "near the ear". Probably the earliest record of a carcinoma of the parotid is represented by a stone gargoyle now in the Trocadero museum in Paris.

At the turn of the past century, in spite of their characteristically rather pronounced variation in histological appearance, all salivary gland tumours were simplistically separated only into "infiltrating" and "encapsulated" types. Serious attempts at clinico-pathological correlation were not made until the late 1940s and early 1950s. This delay was occasioned by a combination of the relative rarity of these tumours and by a policy of expectant treatment for the tumours [3].

The situation remained essentially static till the 5th decade of this century when improvement of surgical technique, better anaesthesia, transfusion services and the advent of antibiotics revived the role of surgery for both benign and malignant tumours of the salivary gland. In the last 30 years considerable progress has been made in the management of parotid tumours with the advent of better investigation like FNAC and CT scan and proper surgical technique [4].

Methodology

The material of the study was obtained from 129 patients who underwent fine needle aspiration of the salivary glands during the period of two years. The smears were collected in the cytology laboratory. Medical College hospital. The clinical details were collected directly from the patients. The study confines itself to patients above the age of 12 years.

The instruments for aspiration consisted of a 10 ml disposable syringe filled with a 22 G. or 23 G. needle. The skin at the site was wiped with an antiseptic and the suspected salivary gland swelling was held with one hand in a factorable position. No anaesthesia was used. The needle was introduced into the swelling sand the plunger of the syringe withdrawn as far as possible creating a vacuum in the system. The needle was moved back and forth in a straight line to obtain sufficient material. Throughout the procedure negative pressure was maintained by retracting the plunger of the syringe. When the aspiration was complete the pressure in the syringe was allowed to equalize before the needle was withdrawn. The syringe was disconnected from the needle, filled with air and reconnected. The contents were expressed onto a glass slide and spread along the slide with the needle itself.

The smears with benign ductual ands acinar cells in a background of polymorphs or lymphocytes or histocytes. The diagnosis of acute sialadenitis was consider when polymorphs were predominant and of chronic sialadenitis when monoucler cells were predominant.

Pleomorphic Adenoma

Smears with a biphasic population oc cells-tightly cohesive flat clusters of cells with tubular and irregular configurations. The cells have eosinophilic cytoplasm and round regular uniform nuclei with inconspicuous nucleoli. Small cluster of cells with abundant cytoplasm and eccentric vesicular nuclei (plasma cytoid cells) may also be present. the background shows plumps ovoid cells or spindle ce;l;ls with scanty cytoplasm and nuclei with baland appearance in fibrillary chondromyxoids ground substance.

Warthin's Tumour

Cellular smear showing sheets of oncocytic cells. The background shows amorphous and granular debris with sheets of lymphocytes. Oncocytic cells have plenty of organophilic cytoplasm and central regular small round nucleus.

Monomorphic Adenoma

Cellular smears with cells arranged in cohesive clusters. Cells are uniform with eosinphilic cytoplasm and round central nucleus. The background shows bare nuclei.

Adenoid Cystic Carcinoma

Smears showing abundant globules of pale grey translucent material surrounded by cells arranged in a palisade manner. Individual cells have scanty cytoplasm and round or oval nucleus with fine to granular chromatin and occasional prominent nucleoli.

Mucoepidermoid Casrcinoma

Cellular smear showing squamous cells, glandular cells, overlapping epithelial cells and intermediate cells. Intermediate cells have moderate nuclear; cytoplasmic ratio, without readily identifiable Keratin production.

The clusters of overlapping cells are fragments of epithelium that are multilayered and have nuclei that overlap each other.

Acinic Cell Carcinoma

Cellular smear showing cells in aggregates and acinar structure. Individual cells show abundant foamy or granular cytoplasm. Nuclei have moderately coarse chromatin and prominent nucleoli. Bere nuclei may be seen. Central fibro vascular core is sometimes present

Inadequate

A scanty cellular smear or drying artifacts making interpretation difficult or unreliable.

Results

Table 1: Age sex Distribution

AGE	Male	Female
12-20	9	3
21-30	10	13
31-40	15	14
41-50	13	08
51-60	16	09
61-70	12	04
71-80	03	0
Total	78	51

Table 2: FNAC of 102 patients who underwent surgery

Fnac Diagnosis.	No. of cases	% of total
Chrocic sialadenitis	25	24.5
Pleomorphic adenoma	31	30.4
Warthin"s tumour	12	11.8
Monomorphic adsenoma	2	1.9
Mucoepidermoid tumour	10	9.8
Acinic cell carcinoma	2	1.9
Squamous cell carcinoma	2	1.9
Inconclusive.	18	17.8
Total.	102	100

The postoperative histopathological report collected from the department of pathology revealed the following data.

Surgery was done in 102 cases who have a preoperative FNAC diagnosis.

Table 3: FNAC of 129 patients who underwent FNAC testing

FNAC	No of cases	% of Total
Chrocic sialadenitis	33	25.58
Pleomorphic adenoma	37	28.68
Worthies tumour	16	12.41
Monomorphic adenoma	2	1.55
Muco epidermal	13	10.07
Cinic cell	2	1.55
Squamous cell	2	1.55
Inconclusive	24	18.61
Total	129	100

The postoperative histopathological report collected from the department of pathology revealed the following data.
Among 129 patients 102 under went surgery, 18 were treated consideration didn't came for follow up.

Table 4: Chronic Sialadenitis On Fnac, With Corresponding Histopathologic Reports

Histopathology	No. of cases	Percentage.
Chronic sialadenitis	22	88
Reactive lymnphnode	3	12
TOTAL	25	100

All the 3 cases misdiagnosed as chronic sialadenitis on FNAC showed sheets of lymphocytes in a dirty background.
The following table shows the analysis of 34 cases diagnosed histologically as Pleomorphic adenoma, with reference to the corresponding FNAC results.

Table 5: Pleomorphic Adenoma on Hisatopathologycorresponding Fnac Reports

FNAC	No. of cases	Percentage.
Pleomorphic adenoma	29	85.29
Inconclusive	5	14.7
TOTAL	34	100

The smears of all 29 cases diagnosed correctly as pleomorphic adenoma on FNAC were cellular and showed a biphasic population of tightly cohesive flat clusters of cells with tubular and irregular configurations. The cluster of cells were with eosinophilic cytoplasm and regular uniform nuclei. Plasma cystoid cells were also present. The back ground showed stellate cells or spindle cells in a chondromyxoid background with bare nuclei.
The 31 cases diagnosed as pleomorphic adenoma on FNAC are analysed against the histopathological report.

Table 6: Pleomoephic Adenoma on Fnac: Their Correspondfing Histopathology

Histological Type.	No. Of Cases	. Percentage
Pleomorphic adenoma	28	90.33
Chronic sialoadenitis	1	3.23
Carcinoma in pleomorphic adenoma	2	6.44
Total	31	100

The FNAC smear of the case diagnosed as carcinoma in pleomorphic adenoma showed large cell clusters having pleomorphism and vesicular nuclei with prominent nucleoli. The FNAC smear of the case diagnosed as chronic sialadenitis showed a cluster or lymphocytes and polymorphs.
10 cases were diagnosed as mucoepidermoid tumour on FNAC.

Table 7: Mucoepidermoid on Fnac; Corresponding Histopathology

Histopathology	No. of cases	Percentage
Mucoepidermo id	8	80
Chronic Sialadenitis	2	20
Total.	10	100

The FNAC smear of the cases of mucoepidermoid tumour showed squamous calls, glandular cells, intermediate cells and over lapping epithelial cells.

Table 8: Warthins Tumour On Histopathology; Corresponding Fnac Report

Fnac Report.	No. Of Cases	Percentage
Warthin"s tumour	10	83.33
Inconclusive	2	16.66
Total	12	100

Table 9: Inconclusive; Corresponding Fnac Report

Histologic type	No of cases
Lipoma	2
Mucoepidermal tumour	2
C/c siladilitis	13
degenerated cyst	1
Total	18

18 cases were reported as inconclusive on histopathology; they are analysed against their FNAC report as follows:-
Among the 102 histologic critical cases, the FNAC result of 18 were inconclusive of the two cases of acinic cello tumour one was diagnosed on FNAC. The smear showed cluster of cells with basophilic granular cytoplasm and central nucleus with nucleoli. In the other one, the aspiration smear was inadequate.
Among the 102 histologically confirmed cases, the FNAC results of 18 were inadequate.

Discussion

A localized salivary gland swelling may be indicative of inflammation, cysts, a benign or malignant tumour. The history and clinical findings provide some clues to reach a diagnosis. A diagnosis is of great value in deciding up on the mode of treatment whether surgery or radiotherapy or chemotherapy. The clinical feature of the benign tumors had definite bearing on the final histopathological type and therefore a reliable guide for the preoperative diagnosis and treatment of parotid tumours. But for malignant tumours clinical has got a definite role in the preoperative diagnosis and thereby the treatment of malignant parotid tumours [5].
The sensitivity and diagnostic accuracy of FNAC varies in different centers based on the expertise of the cytopathologist and the techniques employed. In 1970 Enroth and Zajicek in their study had a sensitivity of 64%. In this study the, sensitivity for diagnosing malignancy was 62.5%. Sismarius *et al.* in their study, had a sensitivity of 85% and a diagnostic accuracy of 92%. David *et al.* 14 in 1992 did his study in a major contributions to this field is from the Stockholm group who have since 1964 published a series of papers. Their cytological accuracy has improved over the last few years.
FNAC is very much useful in the diagnosis of clinically unsuspected or clinically questionable salivary gland tumours. With the application of FNAC, it is possible to differentiate between tumours of lower pole of parotid gland and upper deep cervical lymphnodes or bronchiogenic cysts. Enlargement of submandibular salivary gland is possible to differentiate from

enlarged submandibular lymphnodes. It also help to differentiate between inflammatory conditions and salivary gland tumours [6].

The prime role of FNAC, is as a diagnostic tool that help in the evaluation of salivary gland masses and not as a histologic procedure on which operative decisions can be wholly based on. Other diagnostic modalities which help to differentiate between benign and malignant salivary gland tumours include sialography, CT scan and CT sialography. But these modalities are expensive.

The danger of seeding of tumour cells in the needle tract or in the puncture site remains a matter of concern. Engzell *et al.* found no recurrence involving the skin or the site of fine needle aspiration. Frable also did not find any implantation in his study series. Dissemination of tumour cells by vascular channels is a potential danger. But practically it is not seen [7].

Before 1963 the diagnostic accuracy of FNAC for malignant tumours was only 31%. The earlier workers found it difficult to diagnose adenolymphoma by FNAC. Nuclear atypia common in oncocytes was considered as evidence of malignancy. The presence of bare nuclei and foamy or granular cytoplasm characteristic of acinic cell tumours should not be confused with oncocytomas.

The cellular atypia seen in the cytological smear of pleomorphic adenoma should be observed with caution. Only when, the smear contains many tumour cells with cytological features of malignancy, a diagnosis of malignant mixed tumour is justified. The basal cell adenoma is difficult to distinguish from adenoid cystic carcinoma. The majority of adenoid cystic carcinoma have globules or cylinders of hyaline material. In poorly differentiated adenoid cystic carcinoma the nuclei are larger with prominent nucleoli and coarse chromatin pattern [8].

Well differentiated mucoepidermoid tumours produce no problems in diagnosis. But high grade or poorly differentiated tumours may be difficult to diagnose and they are misdiagnosed as poorly differentiated squamous cell carcinoma. If there is a cystic tumour, the aspiration yield only mucus material and so diagnosis become difficult.

For most of the benign tumours the recommended surgical treatment is wide local excision with an adequate margin of normal gland tissue, except when subtotal or total conservative parotidectomy is required because of the size or location of the tumour. The facial nerve should be visualized and preserved. This approach prevents recurrence and minimizes the facial nerve injury since the risk of neural injury increases with the extent of surgical procedures. Acinic cell carcmoma or low-grade mucoepidermoid carcinoma necessitates the removal of the remaining gland. Adenoid cystic carcinoma of parotid necessitates removal of the entire gland and partial resection of facial nerve. High-grade malignancy necessitates cervical block dissection. Lay Field *et al*. have recommended a limited resection of lesions which show high cellularity with mild to moderate epithelial atypia, followed by a frozen section analysis. The cystic leasions with abundant mucus material and scanty cellularity may be mucoepidermoid carcinoma, pleomorphic adenoma or adenoid cystic carcinoma, benign cysts or Warthin" s tumour. Multiple aspirations are required to prevent false negative reports [9].

The decisions regarding the need for facial nerve sacrifice depend up on the clinical findings, preoperative findings and the extent of tumour. But if the cytological report gives suspicion of malignancy it may help both the surgeon and the patient, mentally prepare for the possibility of sacrificing facial nerve. The surgeon can also think of the rehabilitative measures with the nerve graft.

In cases where a malignant lesion is suspected clinically (based on pain of the swelling, rapid growth of the tumour, and on examination hard and nodular swelling with or without facial nerve involvement), an FNAC is done. If the FNAC is positive for malignancy, then a radical procedure may be done. But, if FNAC done is negative for malignancy, then the FNAC should be repeated. If the repeated FNAC also tuned out to be negative, then the surgical option should be restricted to superficial parotidectomy or submandibular sialadenectomy. Even though, rare complications like small haematomas have been reported, there were no complications in the series [10].

Conclusion

Fine needle aspiration cytology has marked diagnostic significance in management of salivary gland swellings. It improves the management of salivary gland swellings positively. The diagnostic accuracy and specificity can be improved with the experience of the cytopathologist and refinement of technique. So it is a cost effective investigative modality. It has an important role in altering the management of salivary gland swellings especially in those which re clinically benign and cytology showing malignancy and vice versa.

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ORIGINAL RESEARCH

A study on clinical presentation of haemorrhoids in patients undergoing treatment at a tertiary care hospital

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ABSTRACT
Symptoms of haemorrhoids include rectal haemorrhage, discomfort, pruritis, and mass. Haemorrhoids may be seen in persons of all socioeconomic backgrounds, from the poor to the wealthy. Haemorrhoids develop as a result of anal cushion weakening and venous engorgement. In this study, 100 outdoor patients who complained of bleeding per rectum and whose mass had either naturally decreased (second degree) or required physical reduction of mass (third degree) over the course of a year were examined in the general surgery department at Mount Zion Medical College, Adoor. The study examined the results of rubber band ligation in cases of internal haemorrhoids in the second and third degree using observational cross-sectional prospective methods. The Institutional Ethical Committee cleared the study. According to the clinical presentation of the patients, bleeding was the primary symptom in the majority of participants (92%) followed by prolapse during faeces (81%); additional symptoms included pain (27%), irritation (22%)and discharge (18%).
Key words: Haemorrhoids, bleeding, prolapse

INTRODUCTION

Haemorrhoids are the most prevalent benign condition among recognized anorectal illnesses. It has a high incidence ranging from 2.9% to 27.9% globally, with more than 4% experiencing symptomatic haemorrhoids. Haemorrhoids are frequent in clinical practice and affect people of all ages. Both male and female sexes are impacted equally [1,2]. Symptoms of haemorrhoids include rectal haemorrhage, discomfort, pruritis, and mass. Haemorrhoids may be seen in persons of all socioeconomic backgrounds, from the poor to the wealthy. Haemorrhoids develop as a result of anal cushion weakening and venous engorgement.

Depending on the severity of the haemorrhoids, several medicinal, surgical, and instrumental treatments are offered. Laxatives and flavonoids are effective in medical treatments that involve a hot sitz bath. Our study is focused on the instrumental technique-the elastic ligation, which is not a surgery-rather than one of the several surgical methods, such as the more invasive Milligan-Morgan operation or the less invasive arterial ligation employing HAL (hemorrhoidal artery ligation) doppler. Despite the fact that many nonoperative methods, including rubber band ligation, photocoagulation, sclerotherapy, cryotherapy, and minimally invasive methods, are successful in managing symptoms in patients' prognosis, they are associated with recurrences [3,4].

METHODOLOGY

In this study, 100 outdoor patients who complained of bleeding per rectum and whose mass had either naturally decreased (second degree) or required physical reduction of mass (third degree) over the course of a year were examined in the general surgery department at Mount Zion Medical College, Adoor. The study examined the results of rubber band ligation in cases of internal haemorrhoids in the second and third degree using observational cross-sectional prospective methods. The Institutional Ethical Committee cleared the study.

Modified Golligher Grading was used to categorize haemorrhoids [7]. In this study, individuals with either grade II or grade III internal haemorrhoids who refused medical treatment along with the necessary measures for personal cleanliness and daily activities

in either gender and with 14 years of age or older were included. Excluded patients were those with first-degree, fourth-degree, external haemorrhoids, as well as those who missed their follow-up appointment.

Every patient had a thorough history and examination after giving informed, signed permission. Patients who met the requirements for inclusion underwent aseptic rubber band ligation in a daycare setting. Before the surgery, all patients received bowel preparation to prevent intestinal peristalsis for the first 24 hours in order to prevent ligature slippage. The rubber band ligation surgery was carried out in the left lateral sims position without the use of anaesthetic. The proctoscope was introduced and entered up to 1-2 cm above the dentate line after the topical administration of xylocaine jelly. Haemorrhoidal cushions were allowed to form in the proctoscope lumen following a gradual withdrawal, and they were then drawn into the Barron Ligator (Precise, Canada) under negative pressure.

The tissues were drawn into the tip of the cylindrical portion of the ligator until it was elongated and tightened. After that trigger was released, implementing a Barron rubber o-ring band with an inner diameter of about 1mm around the base of the haemorrhoid. All primary haemorrhoids were ligated in one setting. At the end of the procedure, all patients were kept under observation for 1-2 h to detect any early complications such as bleeding, pain, urinary retention, and vasovagal attack. We advised sitz bath at room temperature, a high fibre rich diet, stool softener, proper anal hygiene, to avoid constipation, and proper counselling regarding early and late complications. Outcome parameters such as post-ligation pain or discomfort, the requirement of an analgesic drug, any complications, and time off work were observed. Patients were followed on the 10th day, 1 month, and on 6 months after post-procedure.

Indicators of success included post-ligation pain or discomfort, the need for an analgesic, any complications, and time away from work. Following the procedure, patients were checked on at 10 days, 1 month and 6 months.

RESULTS

In this study, the least percentage of patients were under the age of 25 years (5%), with the majority of patients being between the ages of 36 and 45(68%). (Figure 1)

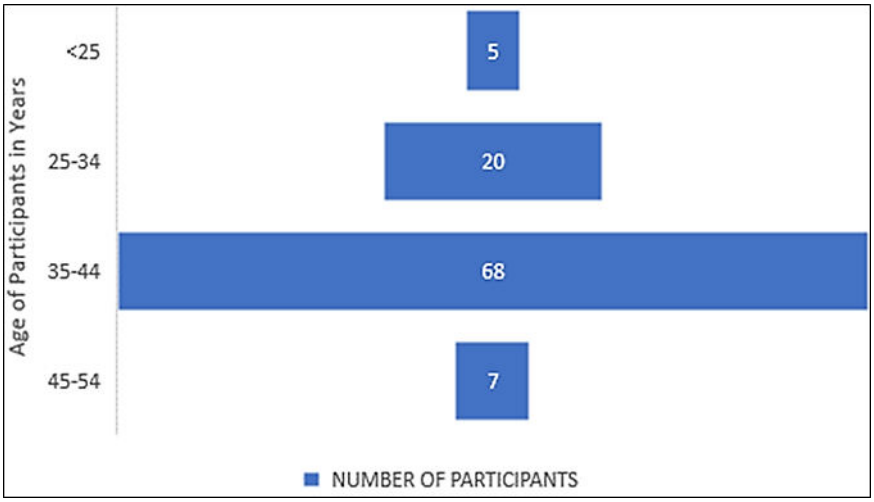

Fig 1: Percentage of participants in different age groups

According to the clinical presentation of the patients, bleeding was the primary symptom in the majority of participants (92%) followed by prolapse during faeces (81%); additional symptoms included pain (27%), irritation (22%) and discharge (18%). (Figure 2)

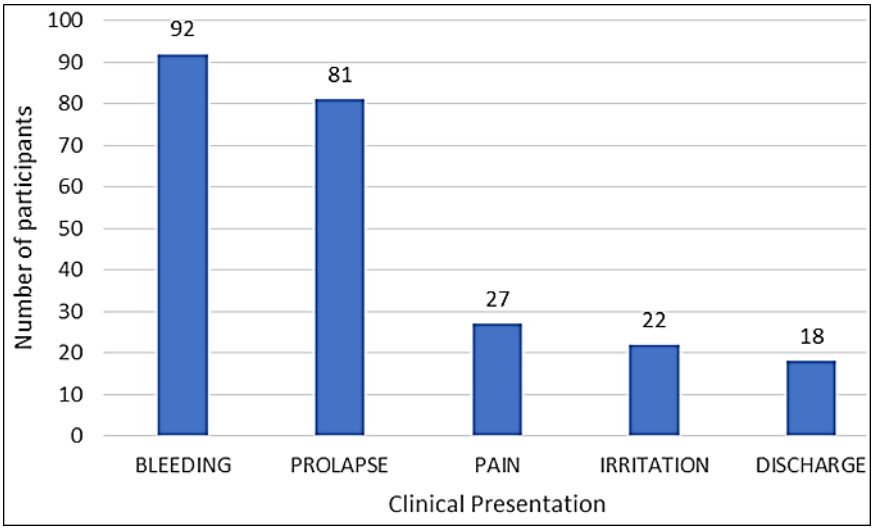

Fig 2: Distribution of participants according to clinical presentation

Only 17% of the subjects received rubber band ligation for second-degree haemorrhoids, which included bleeding and spontaneously reducible mass per rectum. The other 83% of patients had third-degree haemorrhoids, which required manual reduction due to symptoms of bleeding and mass per rectum.

DISCUSSION

There are several therapeutic options available nowadays based on the clinical characteristics and severity of the haemorrhage. It must be safe to undertake haemorrhoidal surgery and no potentially fatal condition must exist. Open haemorrhoid surgery, or the 1937-illustrated Milligan-Morgan procedure, is still often carried out today with a few slight alterations, notably for strangulated and fourth-degree haemorrhoids. In spite of being correlated with post-operative discomfort, it is generally recognized around the world. The rubber band ligation device was first reported by Blaisdell in 1954 and then improved by Barron [5]. Barron conducted a rubber band ligation treatment on 400 patients with first-, second-, and third-degree haemorrhoids and on 750 patients with second- and third-degree haemorrhoids [6]. Worldwide, clinical investigations employing rubber band ligation alone or in contrast to other surgical treatments have shown an average success rate of about 75% or as high as 92%. This study's effectiveness rate was 89%, which is consistent with the studies listed above [7].

It has been shown in several studies that the repeat necessity for rubber band ligation ranged from 6% to 20%, and in the Bayer *et al*. research, 18% of the patients needed repeat rubber band ligation whereas 2.1% of the patients needed traditional haemorrhoidal surgery [8]. In this study, 11% of participants still experience symptoms after six months that call for a traditional hemorrhoidectomy.

CONCLUSION

According to the clinical presentation of the patients, bleeding was the primary symptom in the majority of participants (92%) followed by prolapse during faeces (81%); additional symptoms included pain (27%), irritation (22%), and discharge (18%).

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ORIGINAL RESEARCH

Rubber band ligation as a simple safe and cost-effective procedure for haemorrhoids

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ABSTRACT
The rubber band ligation procedure is the least invasive of these modalities, with a lower risk of complications and no requirement for hospitalization. As a result, the current study was designed to assess the efficiency of rubber band ligation in grade II and III internal haemorrhoids, as well as the size and pattern of post-procedural problems. This prospective observational research was carried out on a sample of 100 patients who visited our outpatient department and were identified as having either grade II or grade III haemorrhoids. Barron Ligator (Precise, Canada) banded all recruited research patients with haemorrhoids in a single session using a rubber band and the local anaesthetic drug xylocaine jelly. To measure symptomatic improvement, all patients were followed on the 10th day, 1st month, and 6th month following the surgery. The goal of this study is to determine the efficacy of rubber band ligation in several clinical parameters such as post-ligation pain or discomfort, the need for painkiller, any complications, and time lost from employment. After rubber band ligation, 89% of them had symptom relief, while the remaining 11% experienced lingering issues. As suggested by our study, we conclude that rubber band ligation for grade II and III haemorrhoids is a straightforward, safer, and easy-to-perform outpatient treatment with less analgesic requirements and no need for anaesthesia.

Key words: Day case surgery, bleeding per rectum, mass per rectum, interno-external hemorrhoids, rubber band ligation procedure

INTRODUCTION

Haemorrhoids are the most prevalent benign condition among anorectal disorders. Haemorrhoids can be treated using a variety of methods, including medicinal, surgical, and instrumental methods. Rubber band ligation, sclerotherapyand infrared and laser therapy are examples of instrumental treatments.

Due to the lack of hospitalization and use of local anaesthetics such 2% xylocaine jelly with lower risk of complications, rubber band ligation is a daycare technique. Grade III haemorrhoids are often treated with instruments, perhaps in combination with carefully monitored medical care. For grade IV haemorrhoids, surgery is the better option. Interno-external haemorrhoids are often treated surgically (open, closed, or minimally invasive) on a global scale.

Rubber band ligation is the most efficient non-invasive treatment for grade II haemorrhoids. There are various disagreements among surgeons on the use of purely instrumental approaches vs. carefully followed medicinal therapy for rubber band ligation procedures in grade III haemorrhoids. Numerous scientific studies have been published that demonstrate the effectiveness of rubber band ligation in third-degree haemorrhoids[1,2]. Currently, it is minimally painful, non-invasive, frequently performed in daycare settings, and allows for a quicker recovery without the need for hospitalization. With this background, we hypothesize that conducting this study will allow us to assess the effectiveness of rubber band ligation for second- to third-degree haemorrhoids as well as the scope and pattern of postoperative complications.

METHODOLOGY

In this study, 100 outdoor patients who complained of bleeding per rectum and whose mass had either naturally decreased (second degree) or required physical reduction of mass (third degree) over the course of a year were examined in the general surgery department at Mount Zion Medical College, Adoor. The study examined the results of rubber band ligation in cases of internal haemorrhoids in the

second and third degree using observational cross-sectional prospective methods. The Institutional Ethical Committee cleared the study.

Modified Golligher Grading was used to categorize haemorrhoids. In this study, individuals with either grade II or grade III internal haemorrhoids who refused medical treatment along with the necessary measures for personal cleanliness and daily activities in either gender and with 14 years of age or older were included. Excluded patients were those with first-degree, fourth-degree, external haemorrhoids, as well as those who missed their follow-up appointment.

Every patient had a thorough history and examination after giving informed, signed permission. Patients who met the requirements for inclusion underwent aseptic rubber band ligation in a daycare setting. Before the surgery, all patients received bowel preparation to prevent intestinal peristalsis for the first 24 hours in order to prevent ligature slippage. The rubber band ligation surgery was carried out in the left lateral sims position without the use of anaesthetic. The proctoscope was introduced and entered up to 1-2 cm above the dentate line after the topical administration of xylocaine jelly. Haemorrhoidal cushions were allowed to form in the proctoscope lumen following a gradual withdrawal, and they were then drawn into the Barron Ligator (Precise, Canada) under negative pressure.

The tissues were drawn into the tip of the cylindrical portion of the ligator until it was elongated and tightened. After that trigger was released, implementing a Barron rubber o-ring band with an inner diameter of about 1mm around the base of the haemorrhoid. All primary haemorrhoids were ligated in one setting. At the end of the procedure, all patients were kept under observation for 1-2 h to detect any early complications such as bleeding, pain, urinary retention, and vasovagal attack. We advised sitz bath at room temperature, a high fibre rich diet, stool softener, proper anal hygiene, to avoid constipation, and proper counselling regarding early and late complications. Outcome parameters such as post-ligation pain or discomfort, the requirement of an analgesic drug, any complications, and time off work were observed. Patients were followed on the 10th day, 1 month, and on 6 months after post-procedure.

Indicators of success included post-ligation pain or discomfort, the need for an analgesic, any complications and time away from work. Following the procedure, patients were checked on at 10 days, 1 month and 6 months.

RESULTS

According to the Visual Analogue Scale (VAS) used to measure post-procedure discomfort, 78% of patients reported no difficulty, 13% reported mild discomfort, 9% reported moderate discomfort (lasting less than three days) and none reported severe discomfort. (Figure 1)

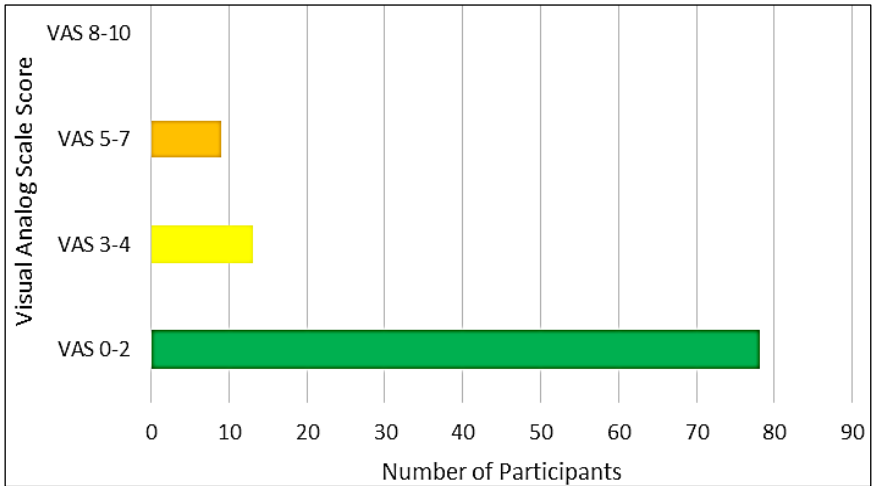

Fig 1: Distribution of cases as per the assessment of post-procedure discomfort by VAS

According to the amount of analgesic medication needed, 78% of patients needed none, 16% needed it for 1-3 days and 6% needed it for longer than 3 days. (Figure 2)

After the treatment, the majority of the participants (79%) went back to their regular workday, while 7% of participants started working four days later. The remaining 14% joined the workforce within one to three days. (Figure 3)

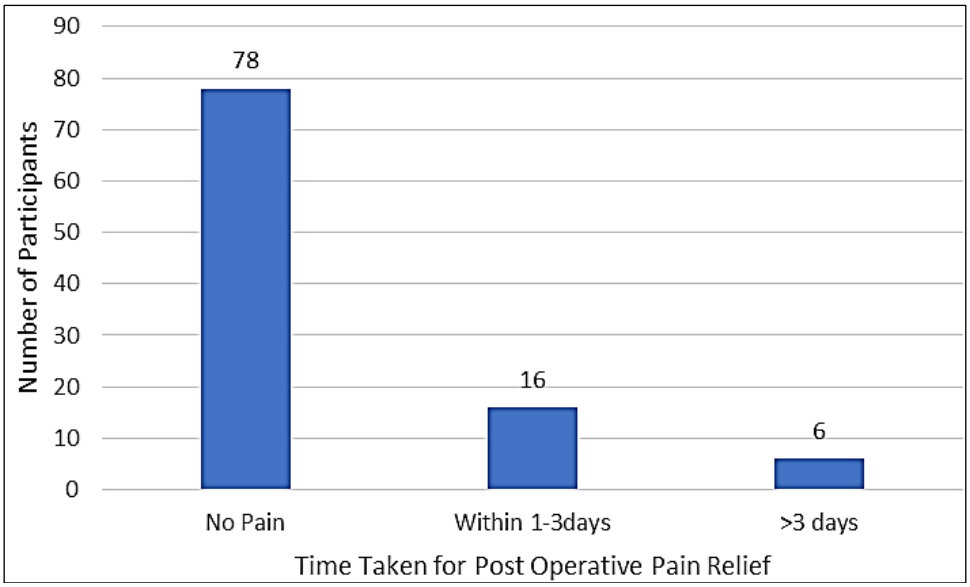

Fig 2: Distribution of patients according to the duration of analgesic requirement

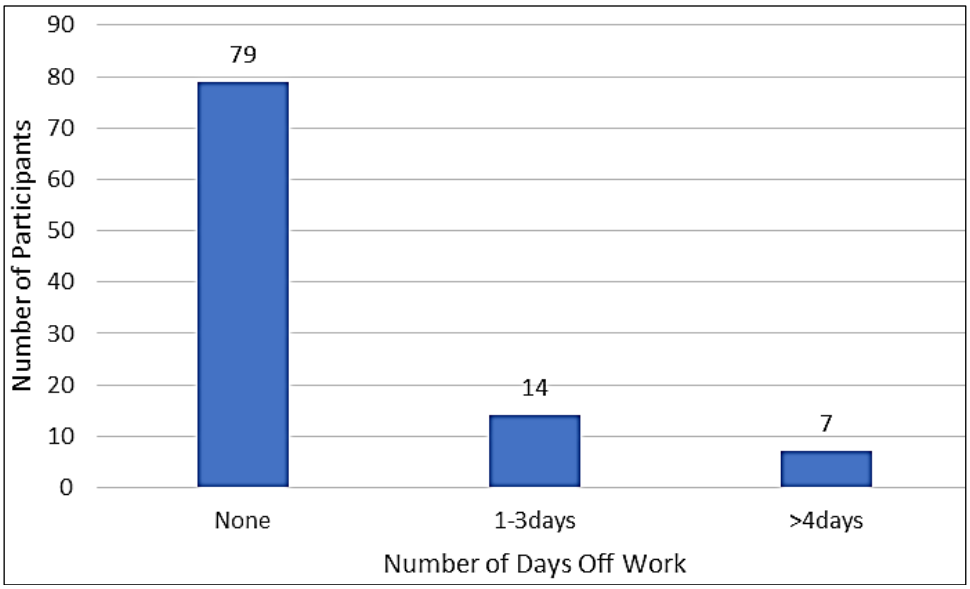

Fig 3: Distribution of patients according to number of off-days from duty

After the rubber band ligation, complications might range from mild to serious, necessitating hospitalization. After rubber band ligation, 22% of patients report anal discomfort, and 18% of patients have rectal haemorrhage. There were three individuals with urinary retention who needed catheterization, but no additional infections or vasovagal attacks were seen as complications. (Figure 4)

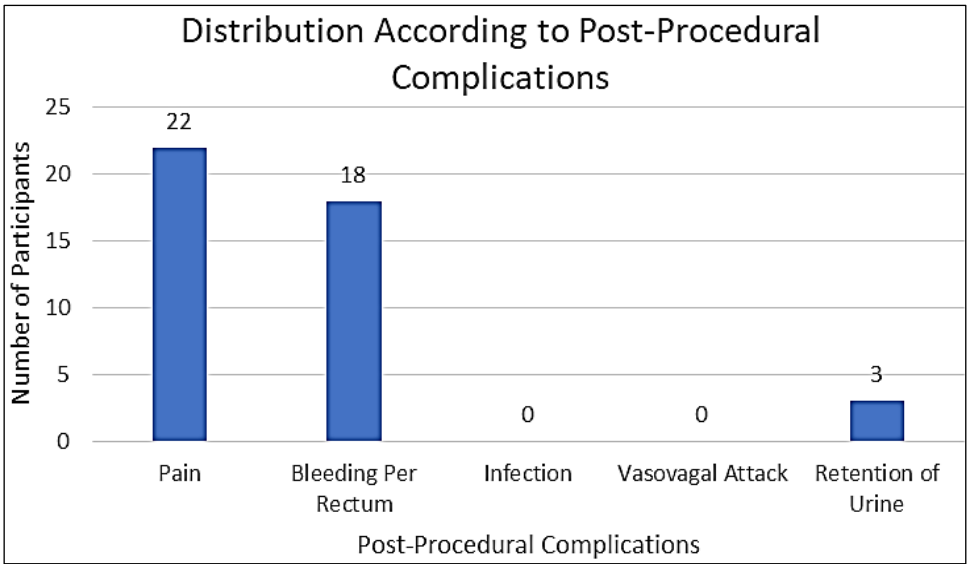

Fig 4: Distribution of patients with post-procedural complications

Following a follow-up on the tenth day, one month, and six months after the rubber band ligation procedure, clinical symptoms such rectal bleeding, discomfort and piles mass prolapse gradually subsided. After the tenth post-procedural day, irritation and discharge abated. Figure 5 provides a summary of the parameters that were observed at the follow-up visit.

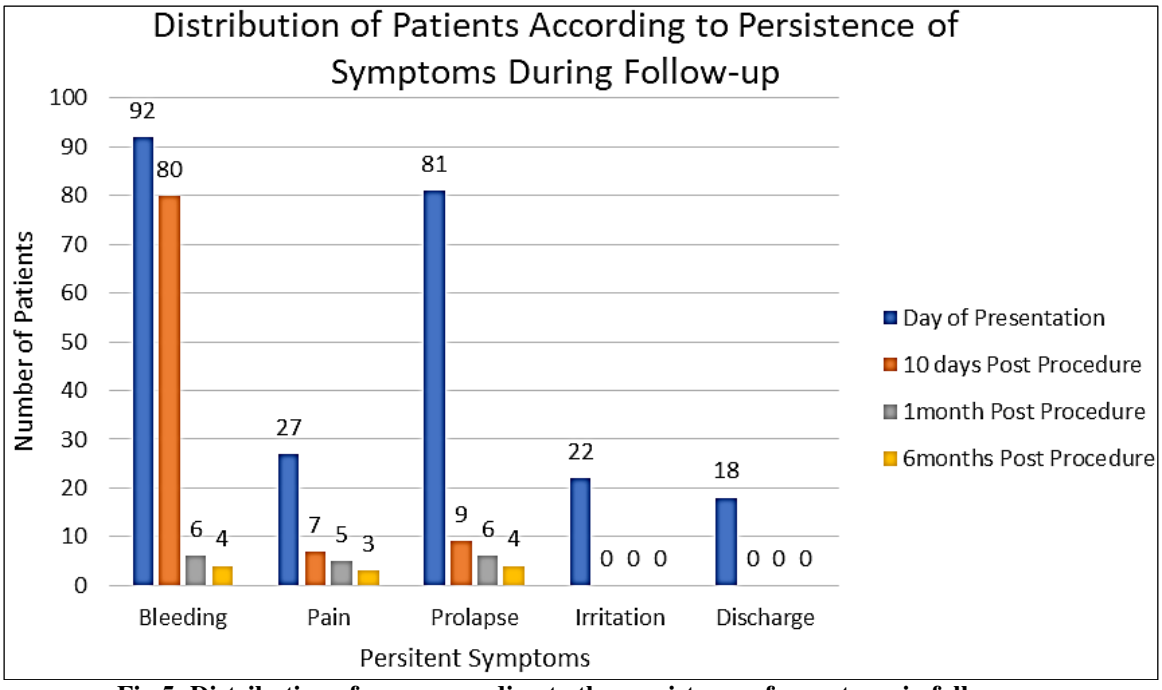

Fig 5: Distribution of cases according to the persistence of symptoms in follow-up

DISCUSSION

In studies by Komborozos*et al*. and Bat *et al*., problems of bleeding via rectum were recorded in 2.2% of patients [3,4]. Bleeding is the most unavoidable consequence following rubber band ligation. It results from localized irritation and the haemorrhoidal nodule falling out. According to this study, rubber band ligation operation complication rates were 6.0% after one month and 4% after six months.

Based on the remission of presenting symptoms, lack of repeat treatment, patient satisfaction, and time before returning to work, Forlini*et al*. 2009 endorsed the safety of rubber band ligation [2]. According to Johansson et al., only 10% of patients who had rubber band ligation needed excisional hemorrhoidectomy, but 6.6–14% of them needed subsequent treatment because their symptoms returned [5]. In this trial, 11% of participants had symptoms that required conventional surgery after six months.

According to a review by Lee *et al*. of 39 studies involving 8060 rubber band ligation patients, postbanding complications included severe pain

(5.8%), rectal bleeding (1.7%), and infection (0.05%). However, 415 patients experienced mild pain 24 to 48 hours after the procedure, which could be treated with warm sitz baths and oral analgesics [6]. The same outcomes were reported by Gehamy and Weakley. In this trial, 78% of patients needed no analgesic medication and were alleviated by a warm sitz bath, whereas 16% needed analgesics for 1-3 days and just 6% needed them for longer than three days [7].

According to Saviozet *al*., 9.2% of cases of symptomatic recurrence following rubber band ligation required further rubber band ligation or surgery [8]. In this study, we discovered that 4% of patients still experience rectal bleeding six months following the treatment. According to research by Bat *et al*., the risk of problems following rubber band ligation was rather low (4.2%), and the majority of them were mild and self-limiting [9]. In our study, 3% of individuals experienced urinary retention along with a slight bleeding and pain issue.

In a retrospective investigation of the short- and long-term effectiveness of rubber band ligation for haemorrhoids, Gaglooet *al*. found that 92% of second-degree and 76% of third-degree patients had no problems after two months. In this study, problems such as bleeding, discomfort and prolapse are present in 17% of patients at the end of the first month and in 11% of patients after six months [10].

In their study, Walker *et al*. found that 20.2% of patients missed work and 25% of patients had postprocedural problems. 79% of participants in this research went back to work the next day after the surgery [11].

Our study had a couple of drawbacks. There is just one centre from which this study is being done. Given the rising prevalence of haemorrhoids, multicentric research is required to determine if rubber band ligation is effective in treating grade II and grade III haemorrhoids. Modifying one's diet and way of life are crucial parts in managing haemorrhoids. All patients who were included were given the necessary nutrition and lifestyle recommendations, however our study did not control for or monitor long-term post-operative lifestyle changes [12].

CONCLUSION

The most prevalent benign anorectal disease in adults, and mostly in men, are haemorrhoids. The daycare method of rubber band ligation is convenient for patients and doesn't require anaesthetic. Patients experienced less problems, used fewer analgesics, and were able to return to their jobs more rapidly after treatment for second-and third-degree haemorrhoids. The emergency technique is also used to stop active haemorrhoids bleeding. The rubber band ligation technique, which is most frequently used for patients who are unable to undergo surgery or who have a co-morbid condition that contraindicates anaesthesia but is not used in thrombosedhaemorrhoids, is more effective in second-degree than third-degree haemorrhoids.

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Clinical profile of patients with chronic salivary gland swellings

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Abstract
Parotid gland is the largest of the salivary glands situated immediately inferior and anterior to the lower part of the ear. The gland weighs 14-18gms. The gland is purely serous in nature. It forms an irregular, lobulated, yellowish mass lying below the external acoustic meatus between the mandible and the sternomastoid muscle. It project forwards on to the surface of the masseter, where a small part of it, usually more or less detached, lies between the zygomatic arch above and the parotid duct below. This detached part is the accessory part of the parotid. The materials of the study was obtained from 129 patients who underwent fine needle aspiration of the salivary glands and the study confines itself to patients above the age of 12 years. The instruments for aspiration consisted of a 10 ml disposable syringe filled with a 22 G. or 23 G. needle. The skin at the site was wiped with an antiseptic and the suspected salivary gland swelling was held with one hand in a factorable position. No anaesthesia was used. In all the 22 cases correctly diagnosed as chronic sialadenitis, FNAC showed smears with benign acinar and ductal cells and the background showing sheets of lymphocytes, macrophages or neutrophils. In 2 case misinterpreted as pleomorphic adenoma, there were mono layered Sheets of ductal cells in a background of lymphocytes. In some areas, cells with squamoid appearance were seen. In the case misintrepted as warthins tumour showed amorphous and granular debris with sheets of lymphocytes. The smear showed sheets of oncocytic cells.

Keywords: Chronic salivary gland swellings, FNAC, warthins tumour

Introduction
Salivary gland consists of 2 parotid gland, 2 submandibular glands, sublingual glands and multiple minor salivary glands. The minor glands are seen throughout the entire upper respiratory tract, palate floor of the mouth and base of the tongue.

The parotid is invested in the periparotid facia which support it from zygoma and becomes continuous with masseter facia anteriorly and sternomastoid facia posteriorly, within this facia there are 15 to 20 lymph nodes and their enlargement mimics a parotid tumour. A dozen of lymph nodes are embedded in parotid glandular tissue [1].

Parotid gland is the largest of the salivary glands situated immediately inferior and anterior to the lower part of the ear. The gland weighs 14-18gms. The gland is purely serous in nature. It forms an irregular, lobulated, yellowish mass lying below the external acoustic meatus between the mandible and the sternomastoid muscle. It project forwards on to the surface of the masseter, where a small part of it, usually more or less detached, lies between the zygomatic arch above and the parotid duct below. This detached part is the accessory part of the parotid [2].

The gland is enclosed within a capsule derived from the investing layer of deep cervical facia, which splits between the angle of mandible and mastoid process to enclose the parotid gland. The part covering the superficial surface is dense and closely adherent to the gland and attached to the zygomatic arch. The deep part of the capsule is attached to the styloid process, mandible and tympanic plate and blends with the fibrous sheath of the muscles related to the gland. A portion of the facia attached to the styloid.

The total quantity of saliva produced in 24 hours is about 1000-1,500m1. About 90% of this is derived from parotid and submandibular glands and is more or less equal amounts.

The salivary gland secretion is controlled by physical and psychic stimulation mediated via the autonomic nervous system. Physical stimulation from the oral cavity and psychic stimulation from taste, smell or sight centers are relayed along the afferent pathways to three superior and inferior salivary nucleus in the medulla.

Afferent pathways utilize both the sympathetic and parasympathetic systems. For the parasympathetic innervations of parotid, pre ganglionic fibre leave the inferior salivary nucleus with the tympanic branch of 9th cranial nerve to the tympanic plexus. This is called jacobson's nerve. This leaves the tympanic plexus as lesser superficial petrosal nerve and travels to the otic ganglion. The fibres relay in the ganglion. Postganglionic fibres proceed to the parotid gland via auriculo temporal branch of mandibular division of the trigeminal nerve. Sympathetic fibres leave the ventral roots of the upper three thoracic segments and ascend in the cervical sympathetic chain of superior cervical ganglion where they synapse. Post ganglionic fibres reach the parotid via the carotid plexus traveling with the middle meningeal artery [3].

Parasympathetic supply of the submandibular gland arise from superior salivary nucleus by the nervous intermedius part of facial nerve and chorda tympani joining the lingual nerve. The fibres travel to the submandibular ganglion and relay there. Postganglionic fibres proceed to the submandibular and sublingual glands via branches of the lingual nerve.

The sympathetic fibres leave the superior cervical ganglion and reach the submandibular gland via fibres running with the facial artery.

The mechanism of salivary secretion requires energy for the production and secretion of organic substances across cell membrane against a concentration gradient [4].

The rate of flow shows a diurnal variation. Reduced production in early morning and increased production in the afternoon. The rate of production is almost zero during sleep. The fluid formation occurs in the acni. Saliva when first formed is isotonic with blood and contains a much larger amount of sodium than potassium. As it passes through the ducts it gradually becomes less and less concentrated, so that in the oral cavity saliva is hypotonic to blood and the sodium concentration falls considerably and potassium level rises. The striated cells of the smaller ducts are responsible for this change. Few mucous secreting goblet cells are present in the parotid gland and ducts. In chronic inflammation appreciable amount of mucus is seen coming from the duct. Cat ions in saliva are Na+, K+ and calcium. Salivary calculi are made up of calcium phosphate and carbonate. Iodine is excreted by saliva [5, 6].

Methodology

The materials of the study was obtained from 129 patients who underwent fine needle aspiration of the salivary glands and the study confines itself to patients above the age of 12 years. The instruments for aspiration consisted of a 10 ml disposable syringe filled with a 22 G. or 23 G. needle. The skin at the site was wiped with an antiseptic and the suspected salivary gland swelling was held with one hand in a factorable position. No anaesthesia was used. The needle was introduced into the swelling sand the plunger of the syringe withdrawn as far as possible creating a vacuum in the system. The needle was moved back and forth in a straight line to obtain sufficient material. Throughout the procedure negative pressure was maintained by retracting the plunger of the syringe. When the aspiration was complete the pressure in the syringe was allowed to equalize before the needle was withdrawn. The syringe was disconnected from the needle, filled with air and reconnected. The contents were expressed onto a glass slide and spread along the slide with the needle itself.

The smears with benign ductual and acinar cells in a background of polymorphs or lymphocytes or histiocytes. The diagnosis of acute sialadenitis was consider when polymorphs were predominant and of chronic sialadenitis when monocular cells were predominant.

A detailed history and clinical examination was done and a clinical diagnosis reached. FNAC was done and patient subjected to surgery accordingly. The histopathology of the specimen comparing with the FNAC was analyzed.

The different statistical data has been tabulated.

Results

Table 1: Distribution of patients according to sex

Sex	No. of patients	% of total
Males	78	60.4
Females	51	39.6
Total	129	100

The youngest patient was 13 years and oldest 78 years.

Table 2: Salivary gland lesions based on histopathology

Histologic type.	No. of cases	% of total
Chronic sialadenitis	31	30.39
Benign tumours	48	47.06
Malignant tumours.	14	13.73
Metastatic tumours.	2	1.96
Others.	7	6.86
Total	102	100

The category "others" include 3 reactive lymph nodes, 2 nonspecific cysts, 2 lipomas.

Table 3: Distribution of malignant histologic types

Histological type	No. of cases	% of malignant tumours
Muco epidermoid carcinoma	8	50
Carcinoma in pleomorphic adenoma	2	12.5
Acinic cell tumour.	2	12.5
Adenoid cystic carcinoma.	2	12.5
Matastatic squamous cell carcinoma	2	12.5
Total	16	100

Among the 16 cases of malignant tumours, 2 were a metastatic tumour.

Table 4: Distribution of benign histologic types

Histological type	No. of cases	% of benign tumours
Pleomorphic adenoma	34	70.83
Warthin's	12	25
Monomorphic adenoma	2	4.17
Total	48	100

Table 5: FNAC report

FNAC report	No. of cases	Percentage.
Chronic sial adenitis	22	70.98
Pleomorphic tumour	2	6.45
Warthin"s tumour	1	3.22
Mucoepidermoid tumour	2	6.45
Inconclusive	4	12.9
Total	31	100

In all the 22 cases correctly diagnosed as chronic sialadenitis, FNAC showed smears with benign acinar and ductal cells and the background showing sheets of lymphocytes, macrophages or neutrophils.

In 2 case misinterpreted as pleomorphic adenoma, there were mono layered

Sheets of ductal cells in a background of lymphocytes. In some areas, cells with squamoid appearance were seen. In the case misintrepted as warthins tumour showed amorphous and granular debris with sheets of lymphocytes. The smear showed sheets of oncocytic cells.

In the case reported as mucoepidermoid, showed a cellular smear with squamous cells, glandular cells, overlapping epithelial cells and intermediate cells.

25 cases were reported as chronic sialadenitis of FNAC. The corresponding histopathological reports are as follows.

Discussion

The treatment of benign tumours has passed through several phases during the last 30 years. Enucleation practiced earlier carried a high recurrence rate and so it was followed by enucleation and postoperative irradiation.

The superficial conservative parotidectomy was very successful in terms of prevention of recurrence, and the nerve was safe in the hands of skilled operators because the first step in the operation is identification of the facial nerve and it too main branches. It become evident that the procedure was often too extensive, removal of the upper portion of the gland for a small tumour at the lower pole, are unnecessary. Now therefore hemi superficial parotidectomy is often done. That is all the parotid tissue lateral to one main branch, either upper or lower of the nerve. For lesion in the deep lobe total parotidectomy with conservation of facial nerve is advisable.

Parotidectomy may be conservative when all the main branches of the facial here are preserved, semi conservative in which one or more but not all of the main branches are sacrificed, or radical when the entire trunk and distal portion of the facial nerve is sacrificed. Depending upon the part removed, it may be superficial, deep or total, deep parotidectomy is not recommended because of the risk of fistula formation; more over it is difficult to approach deep lobe with the superficial lobe in situ [6].

The basic operation for parotid neoplasm is the superficial or lateral parotidectomy. The procedure will suffice for all superficial lobe begin neoplasms. In addition injection of a 1: 5000 solution of epinephrine into the area of incision and the area of main trunk of the facial nerve will aid in decreasing capillary oozing. A doubly modified Blair incision, a standard parotidectomy incision or some combination of two or sistrunk"s incision may be used depending on the circumstances. Draping should be performed so that the entire face can be visualized.

The only constant location of the facial nerve is at the stylomastoid foramen, posterolateral to the base of the styloid process. In general this is the preferred location to attempt identification of the nerve. Following incision and elevation of the flap the key to rapid identification of facial nerve is mobilization of the posterior surface of the gland off the sternomastoid muscle and the cartilaginous and bony ear canal. The gland is reflected forward until the posterior belly of the digastric can be seen and the tragal pointer has been identified. At this point the styloid process can be readily palpated and the three land marks triangulate the nerve. The main trunk is usually greater that I cm deep to and slightly inferior to the tragal pointer and is surrounded by a small amount of fat [7].

It is a very useful investigation in the diagnosis, of a salivary gland swelling. In experienced hands, this test has good accuracy that exceeds frozen section diagnosis.

The first report of needle biopsy has been traced back to report in 1847 by Kum. The procedure was introduced by Martin and Ellis at the Memorial Hospital in 1925. It flourished during the next 20-30 years but subsequently declined for reasons that are not entirely known. The procedure was revived by Lopez cardio in Netherlands and Soderstorm in Sweden, who used today's technique using a thin needle of 22 G and higher with an external diameter of 0.6 mm or less [8].

It was the Scandinavians who laid the foundation for fine needle aspiration cytology of salivary glands. Eneroth and Zajicek were the first to record the morphological characteristics that helps differentiate between the various types of salivary gland tumours by using fine needle aspiration18. By 1964 Manc had collected 652 fine needle aspiration biopsies at the cytology department, Stockholm, Sweden.

Berge and Soderstrom standardized the technique of fine needle aspiration of the salivary glands. They described appearance of acinar cells and ductal epithelium in the aspiration smear of normal gland and also the patterns obtained in chronic sialadenitis and pleomorphic adenoma.

Even though Stewart and Von Haam expressed great enthusiasm after examining the aspirates from mixed tumours of salivary gland swelling the procedure did not gain Popularity USA. This was due to a suspected risk of dissemination of the tumour cells through the needle tract or efferent lymph or blood vessels resulting in extensions of tumour growth. Engzell conducted a study in Karolinska institute and concluded that there was no evidence of recurrence or local extension of the tumour that might be attributed to the fine needle aspiration cytology.

In 1970 and 1980 s many reports came regarding the accuracy of fine needle aspiration cytology of salivary glands. Webb, Presson and Zettergren reported that both inflammatory and neoplastic salivary gland swellings could be diagnosed with accuracy by fine needle aspiration biopsy. Lindberg and Akerman stated that a cytologic report of malignancy wads most likely correct, provided the cytology was very much familiar with fine needle aspiration biopsy [9].

Kline *et al*. reported that inaccurate diagnosing on fine needle aspiration was due to inexperience and improper technique like aspiration from areas of cystic degeneration. Several reports concerning the accuracy of fine needle aspiration cytology in salivary gland swellings are available. The morphological variability the salivary gland tumours made sampling and interpretation difficult a common problem was that of atypical features in pleomorphic adenoma which raised a suspicion of a low grade malignant tumour. Batsakis felt that fine needle aspiration did not give additional information as part of systemic evaluation. He experienced that the effects of FNA on the tissues could causes difficulty in making final histopathological diagnosis [5].

Immunohistochemistry has been used by certain workers in the diagnosis of aspirates from salivary glands. Ostrzega *et al*, investigated the value of immuno cyto chemical staining for Glial fibrillary Acid protein (GFAP) and found it useful in the diagnosis of pleomorphic adenoma and help to differentiate it from adenoid cysatic carcinoma and low grade mucoepidermoid tumour which is GFAP negative. The GFAP reactivity of salivary gland is related to the myxomatous and chondromatous differentiation in pleomorphic adenoma

Some authors to compare and correlate fine needle aspiration of salivary glands with frozen section of salivary glands. In USA many surgeons prefer frozen section to cytology. Fine needle aspiration has other advantage over frozen section. It does not require general anaesthesia, the smears can be read without the pressure of rapid reporting can be repeated and special stains can be used. Since it gives a pre-operative diagnosis, the surgeon can plan the treatment [10].

Conclusion

- Out of the 129 patients who underwent FNAC, 102 patients underwent surgery for the salivary gland swelling. Among them 25 were inflammatory lesions (298%), while 48 were benign tumours (47.1%).
- Pleomorphic adenoma accounted for 70.83% of the benign tumours.

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