



ENDOSCOPIC ASSISTED REMOVAL OF CYSTIC DISEASES OF JAW- A MULTI-INSTITUTIONAL RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Jaw cysts are a typical presentation for outpatient ENT specialists, and they are frequently treated by both ENT and maxillofacial surgeons. Nonetheless, otolaryngologists have an extra advantage when doing minimally invasive enucleations and excisions due to their proficiency with endoscopes. Signifying the need of nasal endoscopy training to oral surgeons. **Material method:** This is a multi-institution retrospective study conducted between 2020 and 2022 in the ENT departments of tertiary care hospitals in Uttar Pradesh and Bihar, North India. There were eleven patients in our study. **Result:** For maxillary cystic lesions, enucleation and excision were performed with endoscopic help using transnasal and sublabial techniques, or a combination of methods for both maxillary and the mandibular lesions. Patients were followed for six months, during which time no recurrence was found. **Conclusion:** There are many approaches to managing cystic lesions in the jaw, ranging from partial removal to aggressive excision needing reconstruction due to increased morbidity. The combined or endoscopy-assisted technique provides minimal morbidity, excellent results with functional preservation, and total excision.

KEYWORDS : Endoscopic Excision, Transnasal, Sublabial, Maxillary Cystic Lesions, Enucleation

INTRODUCTION

Cystic lesions of the Jaw are a varying group of pathologies often grouped together owing to their common anatomic and structural characteristics. Various classificationn has been proposed for Cystic Jaw lesions, WHO classification for Jaw tumors gives an elaborate and exhaustive coverage of plethora of different histological and anatomic subtypes.. Odontogenic cyst are derivatives of odontogenic epithelium and anatomical location, radiological imaging and histology defines it. These are the osseous expansile and destructive lesion of jaw. Radicular cyst, dentigerous cyst and Odontogenic keratocysts accounts for most of jaw cyst, of these radicular cysts are more common.^{1,2,3}

Most of the jaw cysts are initially asymptomatic and diagnosed incidentally, except in cases of radicular cysts which are preceded by pain due to dental caries. Radiological imaging are crucial for diagnosis and see the extension of cyst and definitive management depends on radiological findings. However, these cysts albeit are slow growing but might lead to an unsightly swelling with dull aching to neuropathic sharp pain if left untreated for long and seldom

associated with loosening of other teeth.^{4,5} Management of odontogenic cyst varies from open surgeries to minimal invasive endoscopic approaches.⁶

Endoscopic assisted surgeries are less invasive, offers less morbidity and rarely described in literatures. The aim of the study is to describe combined approached for cystic lesions of jaw.

MATERIALS AND METHODS

This prospective observational study was conducted in ENT departments of two tertiary care teaching hospitals of Uttar Pradesh and Bihar over a period of one year, total 11 patients of jaw cyst (7 maxillary and 3 mandibular) attended, after detail clinical history, physical examination, radiological imaging patients are admitted and surgery performed, post operative follow up with histopathology done.

The following table (Table 1) shows the various patients, their presenting complaints and management approach with complications. No recurrence was observed in one year of followup.

Table 1: Master table showing all the operated cases with presenting complaints, diagnosis, apprach and complications.

S No.	Age years	Sex	Clinical presentation	Diagnosis	Site	Approach	Complications
1	35	F	Facial swelling	Radicular cyst	Mandibular	Combined approach	Temporary Neuralgic pain
2	16	F	Facial pain	Dentigerous cyst	Mandibular	Combined approach	-
3	31	M	Facial swelling	Radicular cyst	Mandibular	Combined approach	-
4	26	F	Palatal swelling	Radicular cyst	Maxillary (FIG 2)	Endoscopic sublabial	-
5	49	F	Facial pain	Dentigerous cyst	Maxillary	Endoscopic medial maxillectomy	-
6	37	F	Palatal swelling	Radicular cyst	Maxillary	Endoscopic sublabial	Temporary Infra-orbital nerve paresthesia

7	24	M	Facial pain + swelling	Radicular cyst	Maxillary	Endoscopic sublabial	-
8	38	M	Facial pain	Dentigerous cyst	Maxillary	Endoscopic modified denker's approach	Temporary Infraorbital nerve paresthesia
9	24	M	Palatal swelling	Radicular cyst	Maxillary	Endoscopic sublabial	-
10	14	M	Left Cheek Swelling	Dentigerous cyst	Maxillary	Endoscopic sublabial with Middle meatal antrostomy	-
11	64	M	Upper alveolar swelling, Headache	Radicular Cyst	Maxillary	Endoscopic sublabial	-

Surgical Technique

Under general anaesthesia mucoperiosteal infiltration with lignocaine and 1:100,000 adrenaline used. Endoscopy assisted excision is done for both maxillary and mandibular cysts. This incorporates a small sized incision as compared to the open approach and introduction of endoscope via the port created (henceforth Combined approach)

In maxillary cysts, 1-2 cm incision made sublabially and then the periosteal flap elevated. Bone over the cyst is punched out enough to pass 4.00 mm endoscope and surgical instruments. Cyst was decompressed and then zero degree 4.00 mm endoscope pass into the cyst cavity and complete cyst wall is enucleated (FIG 1). Cavity not communicating with maxillary antrum, packed with Surgicel™ and sutured. Cavity communicating with maxillary antrum, middle meatal antrostomy done at end of the procedure. Packing done with ribbon gauze soaked in betadine and primary suturing done. Other endoscopic approaches done were Endoscopic modified denkers approach, endoscopic medial maxillectomy and middle meatal antrostomy in one case each.

In mandibular cysts, 1-2 cm incision made on bucco-labial sulcus and periosteal flap elevated . Bone over the cyst is punched out or drilled as needed to create a port to pass endoscope and instruments. Cyst is decompressed and zero degree 4.00 mm endoscope pass and complete cyst wall is enucleated, care taken to preserved alveolar nerve. Cavity is filled up with surgicel and absorbable gelfoam.

Tooth are preserved in all the cases, orthopantomogram (OPG) done in every cases in follow up to see the viability of the tooth.

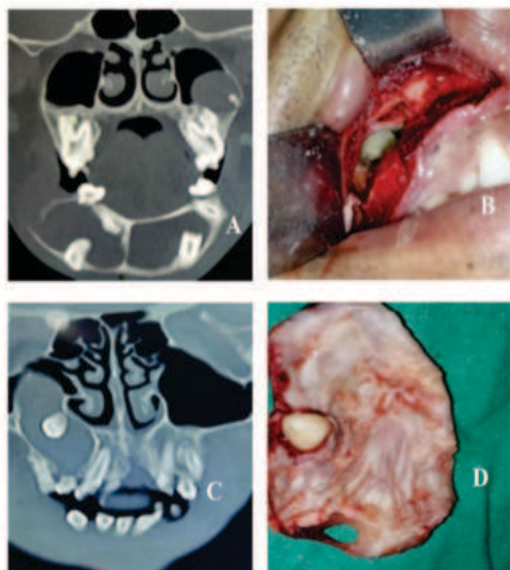


Figure 1: A: CT showing Bilateral mandibular dentigerous cyst , B: Small incision made over upper sublabial area with a small antrotomy for endoscopic port, C: CT showing Left Maxillary dentigerous cyst, D: Post operative excised specimen of dentigerous cyst.

OBSERVATIONS AND RESULTS

This is a prospective study, 11 patients involved in our study which includes five female and six males, between age group of 14 to 64 years with average age 32 years. It includes three mandibular and eight maxillary cystic lesions, which included radicular cysts in seven and dentigerous cysts in four patients.

Various presenting complaints such as Dental and Facial pain, swelling, palatal lump, loosening of teeth, headache, neuralgic pain and foul smelling nasal discharge were the presenting symptoms in jaw lesions.

Clinical examination almost always reveals a dental caries in case of radicular cyst and usually a bony hard mass is palpable over the involved jaw or palate in both Radicular and Dentigerous cyst.

Radiological evaluation was done in all cases to look for the content of the lesions. Primarily a Orthopantomogram is necessary in case of radicular cyst to detect the extent of carious teeth and conventional CT is done for adequate characterization of the lesion. Dentigerous cyst shows an unerupted tooth lying deep in the sac.

All the eleven patients were operated with endoscopic assistance and often assisting an open approach for better visualisation.

The following pie chart shows the various endoscopic or endoscopic assisted approaches used in our study. (Figure 2)

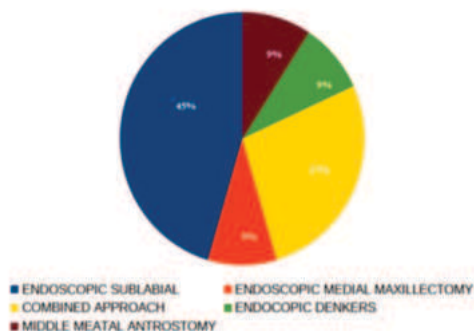


Figure 2: Pie chart showing different surgical approaches used in our series.

Representative Case:

A 13 year old child presented with progressive swelling in left cheek associated with dull aching pain for 3 years, on examination hard bony expansile lesion with central soft area on palpation over left cheek was found.

There was a bulge over left soft palate with missing left premolar tooth on intraoral examination.

CT scan showed expansile left maxillary cyst with a teeth within suggestive of Dentigerous cyst. Excision was done using combined approach with endoscopic assistance under general anesthesia with post operative complete cosmetic as well as functional outcome. (Figure 3)

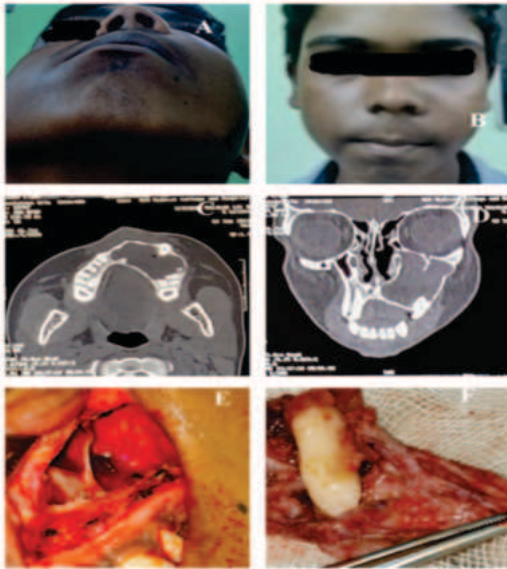


Figure 3: A: Preoperative Image showing bulge over left Cheek, B: Post operative picture showing complete resolution, C and D: Axial and coronal CT images showing dentigerous cyst, E: Intraoperative endoscopic view, F: Post operative specimen showing the cyst with tooth within.

Two patient had temporary infraorbital nerve area paresthesia which improved within three months after surgery and another patient presented with prolonged neuralgic post operative pain lasting for a month improved on conservative management. All these patients were of Radicular cyst. All the patients were followed up atleast for 12 months without any recurrence and are still under regular follow up.

DISCUSSION

Radicular cysts are originates from inflamed epithelium of apex of a non vitalized tooth where as dentigerous cyst arises within the normal dental follicle. These are benign in nature and slow growing, if left untreated then can developed into a large cyst that causes disfiguration of face.⁴

The maxillary sinus and nasal cavities are the paths of least resistance for establishing odontogenic cysts and benign tumors affecting the upper jaw.⁵

There are many option for removal – enucleation, curettage, decompression, marsupialization, and resection. Enucleation has advantage that whole specimen can be sent for histological evaluation, so that even a rare chance of squamous cell carcinoma transformation cannot be missed. Traditionally Caldwell-Luc procedure provides a straightforward approach to the maxillary antrum, however it is often complicated with morbidities than endoscopic removal. Caldwell luc approach comprises a big opening in the anterior wall maxilla and complete enucleation of the cyst wall. As a result of a larger opening, morbidities including extensive denudation of the sinus mucosa leading to crusting and scarring, retraction of the anterior cheek wall, oroantral fistula, damage to the Infraorbital nerve, and nasolacrimal duct injury and dental injury.⁶

Endoscopic removal add advantage as in – 1. better visualization of corners and angles. 2. provide good illumination and magnified visualization. 3. reduces the size of incision.

Presence of important structure such as – orbital apex, infra-orbital nerve, maxillary artery warrant for enucleation with great caution. Other methods (Lateral Rhinotomy for larger

cyst) are aggressive surgery for such a benign disease. Hence endoscopy has a role.⁷

In our study, we preferred minimal invasive approach through use endoscopes which helped in better visualization and complete removal of disease with less morbidity and reduced recurrence rates.

Use of the endoscope in facio-maxillary surgery gives better visualization and good results. The port created in endoscopic surgery are hardly 1-2 cm which prevents removal of rest of normal bone and injuries to infraorbital and alveolar nerve.

Some authors offers trans nasal endoscopic approach, which are time consuming, restricted vision, need better surgical technique.^{8,9} In combined approach, it provides better visualization so complete removal of disease in lesser time with low recurrence rate.¹⁰

CONCLUSION

Combined approach is one of the best modality for the cystic lesions of the jaw, it provides better visualization, direct vision, decreased perioperative risk and complete removal of disease.

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