IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 10 Ver. VII (October. 2016), PP 74-76
www.iosrjournals.org

Study to Highlight Effectiveness of Caldwell-Luc Approach in Managing Odontogenic Cysts and Tumours Involving Maxilla

Dr. C A Ashoka

I. Introduction

Odontogenic Cysts and Tumors are commonly encountered in Oral and Maxillofacial Surgical practice.These cysts usually originate from cells/tissues associated with development of Tooth bearing apparatus. The management of these cysts and tumors presents as a significant challenge and is very critical as well, as majority of these lesions are asymptomatic and usually discovered in routine examination or once they are pronounced extra orally.

The yard stick in successful management of odontogenic cysts and tumours is mainly to ensure prevention of recurrence which otherwise can lead to drastic repercussions.

Success of every surgical intervention in managing such lesions mainly depends on the ease of accessibility to instrumentationas applicable to the site of occurrence according to respective lesions.

Main aim of this study was to highlight effectiveness of Caldwell-luc approach in managing odontogenic cysts and tumours involving maxilla.

II. Materials and Methods

The study was carried out from 2008. All the patients were treated by Oral and Maxillofacial Surgery, Dept of Dentistry, MIMS, Mandya.

As noted in table 1 patients with odontogenictumours and cystsoccurring only in the maxillawere included in the study. A total of 14 patients were involved in the study out of which 7 of them were females. (table 1)

Among them 4 patients had their respective lesions which extending upto the posterior border of the maxillary sinus and coincidentally all of them were odontogenic cysts namely dentigerous cysts.

Size of the lesion varied from 1 cm upto 8cm in diameter measured radiographically.

All the patients were informed about enucleation and the time needed for healing before the surgery .All the patients had signed informed consent.

All the patients underwent enulceation using Caldwell-Luc sub labial approach.

All the patients were followed up till completeregeneration of bone into the defect was established.

During the period of follow up each patient was observed for any complication associated with Caldwellluc approach asmentioned below

- Numbness /parasthesia of infra orbital nerve
- Oraantral fistula
- Epistaxis
- Epiphora

III. Result

All the patients were followed up till completebone healing achieved was achieved.

None of the patients reported any recurrences

No patients had any of the associated complications of Caldwell-luc approach.

Thus proving that Caldwell-luc approach is highly effective in managing odontogenic cysts and tumors occurring in the maxilla, providing adequate vision, and accessibility for instrumentation irrespective of the size and extent of the lesion encountered in our study.

IV. Discussion

All odontogenic cysts and tumours are commonly associated with epithelium arising from the epithelium and mesenchyme associated with development of tooth. [1]

The source of thie epithelium is from Enamel Organ,Reduced Enamel Epithelium,Cell rests of Malassez,and remnants of Dental Lamina or the Tooth Germ itself

They are classified as according to the tables given below. Table 2

Diagnosis of the lesions can be made by carefulclinical, radiographicaland histpathological examination.

Surgical intervention is usually classified as either aggressive or conservative. The goal is to choose the right modality carrying the lowest risk of recurrence and least morbidity, and at the same timerestoring the morphology and function of the affected area.

Having said that, the decision whether to enucleate or marsupialise the cyst depends on careful consideration of various patient factors. Enucleation will alter the normal tooth development and in certain circumstances especially in children the involved tooth should be given a chance to erupt. Marsupialisation has the advantage of reducing the cyst cavity and preserving the involved tooth in the cyst. Hyomoto et al. (2003) found that marsupialisation assisted natural eruption of the impacted tooth in the dentigerous cyst in 72.4% of their subject. Based on that, they concluded that marsupialisation promotes the natural eruption of a cyst-associated tooth and they suggest that in the paediatric population, marsupialisation should be considered as first line of treatment. In adult, the impacted teeth normally have a slim chance to erupt; therefore enucleation is a better treatment.[2]

Surgical enucleation combined with the Caldwell-Luc approach is recommended in treatment of the large maxillary sinus cyst (Kaya and Bocutoglu, 1994), as marsupialisation of these cysts towards the oral cavity will consequently create an oroantral fistula. In our case we perform a surgical enucleation combined with the Caldwell-Luc procedure as it provides ease of access with adequate visibility to all the walls of the respective maxillary sinuses.[3]

Since its introduction, the Caldwell-Luc procedure has become a standard approach for the management of antral disease as well as an operative route to reach such sites as the pterygomaxillary space, orbit, ethmoid labyrinth and medial skull base. [1]

Open approaches to the maxillary sinus were first described in the early 1700s.The well-knowncaldwelluc operation was first described in United States by George Walter Caldwel in 1893.And then by Henri Luc of France in 1897 thus the name caldwelluc approach**.**

Caldwell Luc begins with retraction of the upper lip and incising the mucous membrane through the supradentalregion (canine fossa) above the maxillary premolar teeth.

The advancement of antibiotic therapy and the development of endoscopic sinus surgery however have changed many of the indications for this operation. There still remain, however, conditions where the wide anterior opening provided by the Caldwell-Luc procedure might prove to be beneficial. In our study, the indication for a CaldwellLuc procedure is obvious as it provides maximal exposure for the removal of the tooth with large odontogenic cysts that was located laterally in the maxilla, making the endoscopic approach impossible. Similarly it can be employed to remove mucoceles, pyoceles, and large foreign bodies within maxillary sinus beyond the limit of endoscopy. Another instance where a Caldwell-Luc approach is preferred is in orbital decompression of significant malignant exophthalmoses in patients with Grave's disease

Walsh and Ogura (1957) believed that this procedure was indicated in patients with Graves'sopthalmopathy in whom loss of visual acuity, changes in the corneal epithelium, progressive loss of extraocular function, conjunctival chemosis, orbital oedema or cosmetic disfigurement was found. Caldwell-Luc procedure has been used for surgical access of the pterygomaxillaryspace, in case for internal maxillary artery ligation to treat epistaxis. It has also been used as an approach for sphenopalatine ganglion resection in cases of sphenopalatine or trigeminal neuralgia, and resection of vidian nerve for chronic vasomotor rhinitis. The use of newer instrument such as vascular clip appliers and small telescopes allow for smaller antrostomies with decreased risk of complications. In cases of facial trauma, sublabial incision with the Caldwell-Luc procedure allows access to fracture of maxillary bone, nasomaxillary complex and orbital floor and has been used frequently to reduce those types of fractures. In the Caldwell-Luc procedure, an opening at the inferior meatus is created surgically; the purpose of which to promote sinus drainage. Being in a more dependent position, the Inferior Meatal Antrostomy (IMA) theoretically allows passive drainage of reaccumulated material. Its more accessible location also facilitates suction toilet post-operatively.

However, IMA has been criticized because of the need for an additional time, injury to the nasolacrimal duct, epistaxis from the sphenopalatine artery, and deviation from the normal sinus physiology. Moreover it has been reported to close within 3 months after the operation in 82% of 367 cases (Al-Belasy, 2004). We did not perform IMA in this patient for the above reasons, plus there was no need to provide extra drainage in our patient as she has a patent osteomeatal complex and no nasal anatomic abnormality. Also it is evidenced from the study (Al-Belasy, 2004) that it is not necessary to perform antrostomy at the inferior meatus for Caldwell-Luc procedure for odontogenic pathology such as in our case here. This is also evidenced in our case here that patient never had any recurrence of the disease

Table no 1:

pts	sex	lesion	site	Diameter in cm	treatment
1	m	Dentigerous cysts	R maxilla	8cm	enulceation
2	m	Dentigeroys cyst	R maxilla	6cm	enuclaetion
3	m	Odontogenickeratocyst	R maxilla	4cm	enulceation

4	m	Dentigerous cyst	R maxilla	6cm	enulcaetion
5	f	Dentigerous cyst	L maxilla	6cm	enulceation
6	f	Odontogenickeratocyst	R maxilla	4cm	enulceation
7	m	Radicular cyst	L maxilla	1cm	enucleation
8	m	Radicular cyst	R maxilla	1.5cm	enuclaetion
9	f	Radicular cyst	R maxilla	2cm	enucleation
10	f	Central odontogenic fibroma (WHO type)	L maxilla	3cm	enucleation
11	f	KCOT	L maxilla	2cm	enucleation
12	f	Nasolabiial cyst	R maxilla	2cm	enucleation
13	f	Glandular cyst	L maxilla	3cm	enucleation
14	F	KCOT	L maxilla	4cm	enuclation

Table no: 2

Classification: Cysts of the jaws

A. Epithelial-lined cysts

- **1.** Developmental origin

(a) Odontogenic

- **i.** Gingival cyst of infants
- **ii.** Odontogenickeratocyst
- **iii.** Dentigerous cyst
- **iv.** Eruption cyst
- **v.** Gingival cyst of adults
- **vi.** Developmental lateral periodontal cyst
- **vii.** Botryoidodontogenic cyst
- **viii.** Glandular odontogenic cyst
- **ix.** Calcifying odontogenic cyst

(b) Non-odontogenic

- **i.** Midpalatalraphé cyst of infants
- **ii**. Nasopalatine duct cyst
- **iii.** Nasolabial cyst

2. Inflammatory origin

- **i.** Radicular cyst, apical and lateral
- **ii.** Residual cyst
- **iii.** Paradental cyst and juvenile paradental cyst
- **iv.** Inflammatory collateral cyst

B. Non-epithelial-lined cysts

- **1.** Solitary bone cyst
- **2.** Aneurysmal bone cyst

References

[1]. Kaya O and Bocutoglu O (1994). A misdiagnosed giant dentigerous cyst involving the maxillary antrum and affecting the orbit.Aust Dent J, 39(3): 165-167.
[2]. Walsh TE and Ogura JH (1957). Transantral orbital decompression for malignant exopthalmos. Laryngoscope, 67(6): 544-5681
[3]. Al-Belasy FA (2004). Inferior meatal antrostomy: is it necessary after radical sinus surgery through the Caldwell-Luc approach? J Oral MaxillofacSurg, 62(5): 559-562.
[4]. Hasbini AS, Hadi U and Ghafari J (2001). Endoscopic removal of an ectopic third molar obstructing the osteomeatal complex. Ear Nose Throat J, 80(9): 667-670.
[5]. Hyomoto M, Kawakami M, Inoue M and Kirita T (2003). Clinical conditions for eruption of maxillary canines and mandibular premolars associated with dentigerous cysts. Am J OrthodDentofacialOrthop, 124(5): 515-520.
[6]. Amin ZA, Amran M, Khairudin.Removal of extensive maxillary dentigerous cyst via a Caldwell-luc procedure. Arch Orofacsci 2008;33920:48-51
[7]. Oral and Maxillofacial Pathology, 3 Brad W. Neville DDS