Branchial Cleft Fistulae

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Three rare and interesting cases of complete branchial cleft fistulae including two cases with unusual presentation are reported. Total excision of the fistulae was carried out by step ladder technique in all the three cases resulting in their successful surgical management. Relevant available literature on the subject has been reviewed.

INTRODUCTION

Fistulae, cysts and sinuses of branchiogenic origin have been given many theories for their occurrence and varied nomenclature. In 1964, the term 'Branchial Fistula' was applied for the first time (Simpson, 1969). The terms branchial or lateral cervical are used with these disorders to imply the embryologic origin and usual location of these lesions. Branchial cleft fistulae are the tracts connecting the skin in lateral cervical region to the gut and these result from remnants of both the branchial pouch and cleft with rupture of their interposed branchial plate and hence, these have internal and external openings.

Basically branchial fistulae are divided into primary or congenital fistula and secondary fistula resulting from drainage of a cyst. In practice three types of branchial cleft fistulae are seen i.e.

- (a) complete fistula with outer cutaneous and inner openings into the pharynx;
- (b) incomplete fistula with opening into the pharynx; and
- (c) incomplete fistula without opening on skin surface only (Keatjin Lee and Thomas Klein 1973).

The clinical presentation of branchial cysts differ from that of branchial sinus or fistulae in that the former is most commonly noticed in 2nd to 4th decade of life whereas, the later are almost always seen at or shortly after birth. Chandler and Mitchell (1981). The external opening usually presents in the lower third of the neck as a small skin pit. Anomalies of second branchial cleft are seen most commonly is a proportion of about 6:1 as compared to anomalies of the first branchial cleft. It is the intermittent or continuous discharge of mucous alongwith repeated attacks of inflammation which results in annoying symptoms. This inflammatory reaction may involve great vessel and nerves in the neck and it has been stressed that dissection of the fistulous track during surgery has to be very careful and meticulous. It is also very important to recognise the true nature and extent of the lesions and avoid simple drainage operation or incomplete excision in these patients. Shaheen, O.H. (1984).

Three cases of branchial cleft fistulae encountered and managed by us are reported as follows :

CASE No.1

A 36 years old soldier reported with complaints of recurrent watery and mucopurulent discharge from a tiny pit in lower part of the front of his neck on right side since childhood. His symptoms were mostly present during upper respiratory tract infections and accompanied with pain and redness at the site of discharge. He had repeated courses of antibiotic treatment which gave him relief from symptoms. He gave no history of trauma or surgery on his neck in the past. On examination of the front of neck, a tiny pit of 2-3 mm diameter with mucoid discharge was noticed

just above the medial end of the right clavicle in supraclavicular region. On pressing the area above, the discharge increased. Provisional diagnosis of congenital sinus was made and he was further investigated. A sinogram done after injecting lipiodal through the opening showed a complete fistula communicating to the upper part of the pharynx. With the contrast material spilling over into the pharynx, after it was out from the inner opening (Fig.1).

He was taken up for excision of the fistula under G.A. The fistula was injected with gentian violet dye. A transverse elliptical incision was made

Fig. 1

Sinogram showing lipiodal tracking from outer opening to upper part of the pharynx on the right side

around the mouth for the fistula and tract dissected upwards. As the limit of the dissection was reached another transverse incision was made below the mandible. At the upper limit of dissection (felt in the by palpating finger in the mouth) the closure was done with transfixing sutures with chromic catgut. The wound was closed after leaving a rubber drainage. The patient made uneventful recovery with

satisfactory healing of the wound and has been followed up for the last eight months.

CASE No.2

A 15 years old boy presented with recurrent discharge from an opening in front of the left side of middle of neck, for the last 3 years. The nature of the discharge varied from mucoid to mucopurulent. His father gave history of appearance of a tiny swelling just above the site of opening in neck about 3 years age when it subsided within few days followed by recurrent discharge since then. On examination of the neck there was a small opening (about 2.5 mm diameter) on the left side of front of neck. Suspecting it to be sinus a sinogram was done which revealed a sinus tract extending almost to oropharynx. He was taken up for excision of the

Fig. 2

Step ladder dissection in progress showing complete fistula being dissected out from the upper incision on the left side of neck sinus and with careful dissection the whole tract along with cyst lining at the upper end was excised by step ladder technique and end closed with chromic catgut (Fig.2). It was observed that the fistula in this case traversed between the superior and middle constrictor muscles, and stopped short of oropharyngeal mucosa. He made satisfactory post operative progress and is symptom free for the last one year.

CASE No. 3

A 22 years old girl reported with a recurrent discharging sinus on left side of front of her neck since childhood. The frequency of the discharge

had increased in the last 3 to 4 years; and the nature of the discharge varied from watery to thick yellowish at times. She gives no history of trauma or any operation on the neck. There was no history of fever; loss of appetite, loss of weight or chronic cough. On examination a small pit with sinus track was found located on left side of front of neck in the middle. There was no discharge present but on pressure above the opening, few drops of mucopurulent discharge were milked out. She was investigated and a sinogram showed a sinus track extending upto the lateral wall of oropharynx. She was taken up for excision of the fistula. By careful dissection of the fistula track completely upto oropharynx the whole track was excised and the upper opening closed with 4-0 chromic catgut. A small rubber drain was left in the base of the wound for 24 hours. She made satisfactory postoperative recovery and has been followed up for the last six months with no complaints.

DISCUSSION

The branchial cleft fistulae and sinuses result in repeated discharge due to recurrent infection. There is a common agreement that the ideal treatment of these lesion is complete excision of the track but it is important that adequate drainage and treatment of infection is carried out before any excision is attempted. Mustard WT et al (1969).

Branchial sinuses or branchial pits open alongwith a line between the tragus and the sternoclavicular joint at the anterior border of the sternomastoid Maran (1987). In all the three cases being reported by us the location of the external opening of the fistulae was in the line of sternomastoid.

It is very difficult to differentiate clinically, between branchial sinuses or fistula but at the

same time to differentiate between sinus and fistula is important. All the fistulous tract must be excised completely in order to void recurrence, and this can only be confirmed by a sinogram.

The firm idea of extent of fistula track can be had by injecting under local anaesthesia radio opaque substance, preferably lipiodal. Excision is accomplished by method of step ladder horizontal incisions and gradual deeper dissection of the fistula and once the pharyngeal communication is excised the defect is closed with inserting sutures using 4-0 chromic Catgut. Keatjin Lee and Thomas Klein (1973). In our Case No 1 we followed the similar procedure. Normally the fistula passes subcutaneously from its opening to the thyroid cartilage upper border where it pierces the deep fascia. Then it passes beneath the posterior belly of digastric muscle and stylohyoid, crosses the twelfth cranial nerve and internal jugular vein, and transverse the fork of carotid bifurcation. Later it crosses the ninth cranial nerve and stylopharyngeus to pierce the superior constrictor and opens into the pharynx behind the tonsil on the posterior pillar as described by Mustard et al (1969). In the present Case No.2 the fistula traversed between the superior and middle constrictors.

While attempting dissection of the fistulous track, the surgeon should be well versed in parotid surgery and also ear anatomy, as it has been often found that the track extends towards the temporal region and in the area of external auditory meatus. At time the track goes towards the facial nerve. In this situation it is advisable to identify and dissect the facial nerve intentionally as pointed out by Maran (1987). Fortunately in all the three cases we could achieve complete dissection of the fistulous track without involvement of the EAM or facial nerve.

References

1. Simpson, R.A. (1969) : Lateral cervical cysts and fistulae, *Laryngoscope*, 79, 30-59.
2. Keatjin Lee and Thomas R. Klein (1973) : Surgery of the cysts and tumours in Chapter 49, *Otolaryngology by paparella and shumrick*, Philadelphia, W.B. Saunders Co. 834-836.
3. Chandler, J.R. and Mitchell, B. (1981) : Branchial cleft cysts, sinuses and fistulae in *otolaryngological clinics of North America*, 14, 1 : 175-186.

4. Shaheen. O.H. (1984) : *Problems in head and neck surgery* chapter 2, 28-29.
5. Mustard, W.T. et al (1969) : *Cysts and sinuses of the neck in Paediatric Surgery* Vol.I, 2nd Edition, 280-285.
6. Maran, A.G.D. (1987) : *Benign diseases of the neck in Scott Brown's otolaryngology*, 5th edition by PM Stell, Butterworths, 286-289.

CONFERENCE NEWS

Functional Endoscopic Sinus Surgery Workshop

The Functional Endoscopic Sinus Surgery Workshop was conducted by KKR ENT Hospital and Research Institute (P) Ltd., Chennai on 8th, 9th and 10th August 1997. The course was organized by Professor K.K. Ramalingam and Dr. Ravi Ramalingam. About 275 delegates from all over south India participated in this workshop. The workshop was inaugurated by Prof. A Thambiah, retired Professor of Dermatology, Madras Medical College.

The workshop consisted of cadaver dissections, video presentations, live surgery demonstrations, discussions and lectures. The operative sessions were conducted at KKR ENT Hospital and Research Institute (P) Ltd. and relayed live via cable to the Breeze Hotel where all the delegates watched and discussed the proceedings. The teaching faculty were eminent endoscopic sinus surgeon, Dr. Dharambir Sethi, Acting Head and Consultant, Singapore General Hospital, Singapore, Dr. K. K. Ramalingam and Dr. Ravi Ramalingam. Live surgeries on basic and advanced Endoscopic Sinus techniques were demonstrated by Dr. D.S. Sethi and Dr. Ravi Ramalingam. They included surgery for Sinusitis, Antro Choanal Polypi, Spheno Choanal Polypi, Ethmoidal Polypi, Endoscopic DCR, Endoscopic closure of CSF Leak, Revision Endoscopic Surgery of the Sphenoid Sinus and Pituitary Tumors. Lectures were also conducted on advanced topics such as the management of Orbital Apex lesions, Optic Nerve Decompression and the future of Endoscopic Sinus Surgery.

Delegates who attended the FESS Workshop