

Case Report

Combined Endoscopic and Transcervical Excision of Second Arch Branchial Sinus Using Single Incision: A Cases Report

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Abstract: The recent advances in the endoscopic surgeries have given an opportunity to head and neck surgeons to explore the use of endoscopes in the neck. As compared to the classical method for branchial sinus excision using two step ladder incisions. An endoscopic approach for branchial sinus excision is described using single incision. This procedure is safe and can be done easily with better cosmesis. A good anatomical knowledge and experience in head and neck procedures are must for safe branchial sinus excision. The steps for the procedure involves a) small 5 cm incision in the neck leaving the island of skin around sinus b) Delineating the tract by dissecting the soft tissue around it c) dissecting the tract under endoscopic guidance near the carotid bifurcation and till the pharynx. d) Intraoral dissection from pharynx under endoscopic guidance using sharp instruments. Two patients were operated using this technique and the results are excellent. There were no post operative complication, rapid healing and less scar mark. With advances in the use of endoscopes in all the fields, it also has its applications in the neck. The transcervical endoscopic technique using single incision can be the choice for excision of branchial sinus in the neck with good cosmetic results.

Keywords: Single incision, Endoscopic, Branchial sinus.

INTRODUCTION

Branchial cleft anomalies are common neck swelling in children. Complete branchial fistulae of the second arch and internal cleft are uncommon [1]. Fistulas of the second branchial cleft are the most common branchial anomalies, accounting for as many as 90% of all branchial cleft fistulas [2, 3]. A review of the literature yielded many cases but this technique has never been described, though few articles described endoscopic assisted excision [4]. We present a case of complete branchial sinus excision by an endoscopic transcervical approach using single incision with 2 years follow-up.

CASE REPORT

An 8 years old girl came to ENT outpatient department of King George Medical College, Lucknow with a chief complaint of sinus right side of the neck since birth. There was a history of mucopurulent discharge. On examination, the sinus was present on right side of the neck, just anterior to the anterior border of sternocleidomastoid muscle with no discharge at present. Hence the clinical diagnosis of branchial sinus was made. The ultrasound neck was done which showed the sinus tract extending from the neck to the pharynx. The diagnosis of the complete second arch branchial fistula was made.

Surgical exploration was planned under General Anaesthesia after a complete haematological investigation. The transverse skin incision encircling the fistula in the lower skin crease was planned [figure 1]. The skin was infiltrated with 2% xylocaine and adrenaline 1:2 lakhs in concentration. The skin incision was given and the flaps were elevated superiorly and inferiorly in sub platysmal plane [figure 2]. The fistulous tract was dissected from the surrounding soft tissue towards the carotid bifurcation. The zero degree endoscope was now introduced under the retracted skin flap to visualise the carotids and jugular vein [figure 3]. The tract was dissected from the carotid bifurcation using long artery forceps and scissors. The tract is released from the carotids and dissected till the oropharynx. The oral cavity is then opened using Boyle Davis mouth gag and zero degree endoscope is used to visualise the lateral pharyngeal wall where the tract was opening. Under endoscopic guidance, the tract was passed from the neck to the oropharynx using an artery forceps. The 6 cm long sinus tract was cut and completely removed [figure 4]. The pharyngeal mucosa was closed using the absorbable sutures. The neck wound was closed in two layers without drain [figure 5]. The Histopathological report has confirmed the diagnosis as the branchial fistula as it was lined by pseudo-stratified columnar epithelium and lymphoid follicles. The patient was discharged on the 2nd post-

operative day. The patient is doing well 2 years post operatively.



Fig-1: Incision encircling the fistula



Fig-2: Sub platysmal flap elevation



Fig-3: 6 cm long Brachial sinus endoscopically resected



Fig-4: Complete excision of the tract



Fig-5: Wound after complete excision

DISCUSSION

A branchial anomaly is a congenital developmental defect that arises from the primitive branchial apparatus [5]. Branchial arch anomalies can arise from the first, second, third or fourth arch. The second arch contributes 95% of the total branchial arch anomalies [6].

When unilateral, 70% of them occur on the right side. 39% are complete fistulae, 50% are external draining sinuses and 11% have internal opening alone [7].

A second arch fistula represents persistence of the second branchial cleft during embryological development or can occur when a branchial cyst perforates outward (often presenting between the 2nd and 4th decades) [8]

The second arch branchial anomalies are the most common and can present as cyst sinuses and fistula. These anomalies are found along the anterior border of the SCM. Its tract lies between the internal and external carotid arteries, lateral to the CCA, the glossopharyngeal nerve and the hypoglossal nerve. The sinus opens into the region of tonsillar fossa and normally ends close to the middle constrictor muscle [9]. In our case, it was a right sided unilateral second arch branchial fistula which was opening internally behind the posterior pillar.

Mostly the diagnosis is clinical. The radiological investigation is done to classify the branchial sinus based on internal opening. Preoperative contrast studies delineate the sinus tract well and help in surgical approach [10]. In our case, only ultrasound was done to delineate the tract fistula was complete and internal opening was found in the oropharynx. We prefer doing an intra operative fistulogram by injecting methylene blue into the external fistulous opening through an intravenous cannula. Internal opening is observed in the oropharynx using endoscope in cases of the complete branchial sinus.

Treatment for branchial sinus is complete excision by classical step ladder incision. A series of horizontal incisions, known as a stair-step or stepladder incision, was made to fully dissect the occasionally tortuous path of the tract. The tract was pulled sequentially from this stepladder incision and followed up till the tonsillar fossa [11]. In our case, an only single incision is used and rest of the dissection near the carotid bifurcation is done using a zero degree endoscope. The pharyngeal dissection is done under the endoscopic guidance and the complete tract is removed transorally. The pharyngeal mucosa is sutured using absorbable suture.

The most complication includes incomplete removal leading to reoccurrence. Other complications include secondary infection, injury to facial, hypoglossal, glossopharyngeal, spinal accessory nerves, injury to the internal jugular vein, bad scar and hematoma formation [12].

CONCLUSION

A second arch branchial arch fistula is the commonest in the paediatric population. Through history and clinical examination along with radiological examination is must in reaching the diagnosis. A simple injection of Methylene Blue dye into the sinus tract using an intravenous cannula can delineate the complete tract on the table. A successful outcome can only be achieved by complete excision right from neck skin to the oropharynx. Endoscopic magnification is a great tool in achieving complete excision using single incision.

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