Endoscope-Assisted Approach to Excision of Branchial Cleft Cysts

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ABSTRACT

Objectives: The purpose of this study is to describe an endoscope-assisted surgical technique for the excision of branchial cleft cysts and compare it to the standard approach.

Study Design: It is a retrospective case series review.

Methods: Twenty-six cases described as branchial cleft excisions performed by a single attending at two academic medical centers were identified between October 2007 and April 2014. Twenty-four cases were included in the study. Cases were excluded if final pathology was malignant. Patient charts were reviewed and the two techniques were compared through analysis of incision size, operative time, and surgical outcomes.

Results: This study showed that the length of incision required for the endoscopic approach (mean=2.14±0.24) was significantly less than that of the standard approach (mean=4.10±1.46, p=0.0084) despite the fact that there was no significant difference in cyst size between the two groups (p=0.1735). The other variables examined, including operative time and surgical outcomes were not significantly different between the two groups.

Conclusion: This endoscope-assisted cervical approach to branchial cleft cyst excision is a viable option for uncomplicated cases. It provides better cosmetic results than the standard approach and does not negatively affect outcomes, increase operative time, or result in recurrence.

INTRODUCTION

Branchial cleft cysts are congenital epithelial cysts that form on the lateral aspect of the neck. They are the most common congenital ectoderm of neck masses and are thought to account for about 20% of pediatric congenital head and neck masses.[1,2] Although they can be managed conservatively, the definitive treatment of choice for branchial cleft cysts is resection.[3] In standard practice this can require an incision on the neck that is several centimeters in length and can leave an unsightly scar.

Since endoscopy became available, surgeons have attempted to innovate in order to provide patients with more cosmetic results and fewer complications. Techniques ranging from a retroauricular approach[4,5,6] to a Blagum auriculodigastric and axilla[7] approach[7] have been described. The endoscopic cervical approach described in this study has only been reported a few times in the literature. It was first described by Guerissi in 2002[8] and has since been discussed by Matsui et al.[9] and Chen et al.[10]. This study further serves to strengthen the base of evidence that use of endoscopy in these types of procedures can be advantageous in providing patients with desirable outcomes.

METHODS

This study is a retrospective case series review that compares the standard approach to branchial cleft cyst excisions to a cervical endoscope-assisted approach. Branchial cleft excisions between October 2007 and April 2014 performed by a single attending at two academic medical centers were identified. Of these 26 cases, twenty-four cases (performed on 23 patients) were included in the study. Two cases were excluded due to malignant pathology. Seven of the included cases were endoscope-assisted. The two techniques were compared through analysis of incision size, operative time, and surgical outcomes. Any post-operative complication was noted. Fischer’s exact test and the Wilcoxon two-sample test were used for statistical analysis.

Endoscope-Assisted Branchial Cleft Cyst Excision Operative Technique:

All of the procedures were performed under general anesthesia with patients in a supine position. The patients were prepped and draped in the usual fashion for head and neck surgery. The incision line was marked with a pen over the dome of the cyst. As with the standard approach, an incision was made through the skin and carried down through the platysma. Flaps were elevated in a small subplatysmal plane. The anterior border of the sternocleidomastoid muscle was freed from the underlying mass and a careful dissection through the layers of the anterior cervical fascia was taken down to the capsule of the branchial cleft cyst. All the tissues external to the branchial cleft cyst were cauterized and divided.

Using a 4-mm endoscope and a video camera, the wound was explored with blunt dissection around the various presenting surfaces of the cyst. Any potential tract was identified and ligated. After the mass was excised, the wound was copiously irrigated, the subcutaneous tissues were reapproximated, and the skin was closed.

RESULTS

The 24 patients included in the study ranged in age between 13 and 58 years old. There were 11 male patients and 13 female patients in the study. The cysts ranged in size from 1.3 cm to 7.2 cm. Of the surgeries performed endoscopically, the mean size was 4.43±1.54 compared to the standard approach where the mean was 3.36±1.46 (p=0.1735). Of note, the size of the cyst did not correlate with the rate of complication.

The incision length required for the endoscopic approach (n=7) was significantly smaller than the size of the incision in the standard approach (n=10). In the standard approach, the length ranged from 2 cm to 6 cm, whereas the incisions made for the endoscope-assisted procedures were consistently between 2 cm to 2.5 cm (p=0.0084). There was no significant difference between the length of operations (p=0.0595, n=9). The operative times ranged from 34 to 195 minutes (mean=137.67±34.95).

DISCUSSION

The traditional approach to treatment of branchial cleft cysts is surgical excision, which typically involves a transverse cervical incision and careful exploration and ligation of any associated sinus tracts. With the advent of endoscopy, many techniques have been described in an attempt to improve cosmesis. Besides allowing for a smaller incision, endoscopy is thought to provide better illumination and magnification of the field. This allows for superior visualization around the mass so that vital structures can be protected.

This particular approach takes full advantage of these characteristics unlike the other approaches. In the retroauricular approach, for example, even though the scar is well-hidden, the scar itself is longer and the surgical view is narrowed, which could potentially lead to longer operative times. Although this study noted 2 post-operative complications in the endoscope-assisted group, they were both transient and were less morbid than the complications seen in the other group, which led to subsequent operations and poor cosmetic outcomes. Of note, there were no recurrences in the endoscope-assisted group. Additionally, results from this study are consistent with similar studies that also show no significant difference in operative time between the two groups and significantly smaller incisions for cases in which an endoscope is utilized[10].

While limited given the small sample size and retrospective design, this study is able to illustrate that the use of an endoscope in such procedures is a viable surgical option that can enhance visualization during the operation and improve post-operative cosmesis. To date, only single, small institution studies have been completed; larger-scale prospective studies must still be conducted to better characterize when and how it can be utilized.

REFERENCES


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