

Subcutaneoscopic Excision of External Angular Dermoid Cysts: Our Covert Scar Approach in 11 Cases

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Abstract

Introduction External angular dermoid cysts, or epidermoid inclusion cysts, are a common subcutaneous tumor of the head and neck. For the majority of these lesions, excision is relatively simple and performed through an incision immediately overlying the mass. Facial lesions in pediatric patients present a unique challenge in that a direct approach carries the potential for visible scar formation.

Objective This article aims to detail our experience with subcutaneoscopic excision of external angular dermoid cysts in pediatric patients using endoscopic instrumentation.

Materials and Methods Retrospectively, we reviewed 11 cases, between the ages of 4 months and 3 years with external angular dermoid cysts. An incision is made on the scalp above the hairline, then a tunneled working space is created underneath the skin. 3 mm laparoscopy instruments were then used for providing excellent visualization and precise subcutaneoscopic dissection.

Results There were no complications apparent in any of the 11 cases (except cyst rupture in one case), with mean procedure duration at 61 minutes. Final results at follow-up revealed aesthetically pleasing and well-healed skin incisions, hidden from view behind the hairline.

Conclusion The subcutaneoscopic technique utilizing endoscopic instrumentation has the advantage of improved visualization of the cyst, greater precision of dissection, and excellent cosmesis. One disadvantage of this procedure is that this involves learning a new technique while the majority of surgeons are already comfortable with the open approach. Given the safety and efficacy observed for this subcutaneoscopic procedure, this technique can have tremendous possibilities.

Keywords

- ▶ covert scar
- ▶ laparoscopy
- ▶ endoscopy
- ▶ subcutaneoscopy
- ▶ dermoid cyst

Introduction

External angular dermoid cysts, or epidermoid inclusion cysts, are a common subcutaneous tumor of the head and neck. For the majority of these lesions, excision is relatively simple and performed through an incision immediately overlying the mass. Facial lesions in pediatric patients present a unique challenge in that a direct approach carries the potential for visible scar formation. We describe a subcuta-

neoscopic technique that provides excellent visualization and exposure while avoiding obvious scars on the face.

Methods

Retrospectively, we reviewed 11 cases involving subcutaneoscopic excision of external angular dermoid cyst via a scalp incision. In total, 5 patients were male and 6 patients

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Table 1 Eleven patients undergoing subcutaneous excisions of dermoid cysts

Sex	Age (mo)	Location of cyst	Pathology	Procedure duration (min)
F	4	Left external angular	Dermoid cyst	80
M	5	Left external angular	Dermoid cyst	81
M	8	Left forehead	Dermoid cyst	92
M	9	Dermoid cyst of forehead	Infantile hemangioma	47
F	13	Left external angular	Dermoid cyst	46
F	14	Left external angular	Ruptured dermoid cyst	60
M	16	Right external angular	Dermoid cyst	40
M	20	Right external angular	Dermoid cyst	65
F	28	Right external angular	Dermoid cyst	56
F	42	Right external angular	Dermoid cyst	45

were female, between the ages of 4 months and 3 years old, the mean age being 16 months (see [Table 1](#)). Full institutional review board and ethical approval was obtained through the Baylor College of Medicine Institutional Review Board and Ethics Committee, respectively, and all patients were appropriately consented.

The surgery is performed with 3 mm laparoscopy instruments (hook diathermy and Maryland dissector) and 3 mm/5 mm telescope. A 1- to 1.5-cm incision is made on the scalp above and behind the hairline. Space is then created subcutaneously up to the cyst using Kittner's dissectors and a Foley balloon catheter ([Fig. 1](#)). After creating a tunneled working space underneath the skin, a 3-mm/5-mm telescope is inserted through the incision. The skin was retracted up with retractors and the dissection was completed with 3 mm laparoscopy instruments. This method provided excellent visualization, allowing for precise dissection without much

difficulty ([Fig. 2](#)). Subsequently, the mass was sent to pathology and the wound closed ([Fig. 3](#)).

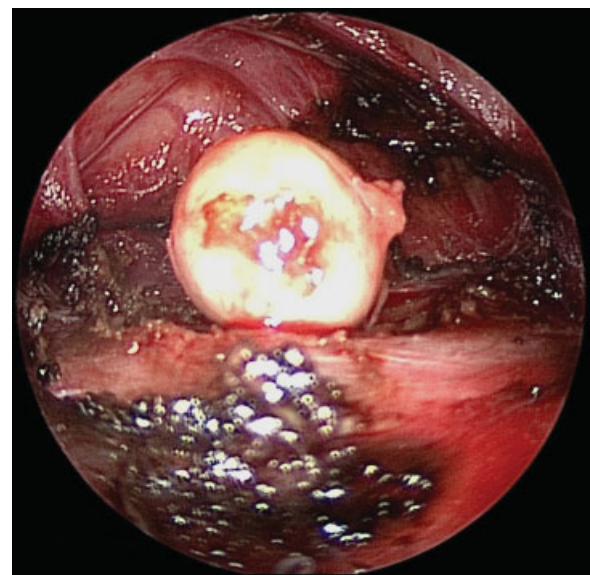
Results

There were no complications apparent in any of the 11 cases except one intraoperative cyst rupture. Mean procedure duration was 61 minutes (see [Table 1](#)) and final pathology results yielded 10 dermoid cysts (1 ruptured) and 1 infantile hemangioma.

The final results at 2 weeks' and 6-month follow-up revealed aesthetically pleasing skin incisions that healed well and were hidden from view, among all 11 patients ([Fig. 4](#)).

Discussion

Endoscopic procedures are prevalent across surgical specialties from plastic surgery brow lifts and breast augmentation,

**Fig. 1** Subcutaneous space creation and CO₂ insufflation.**Fig. 2** Dermoid cyst viewed on endoscopic dissection.

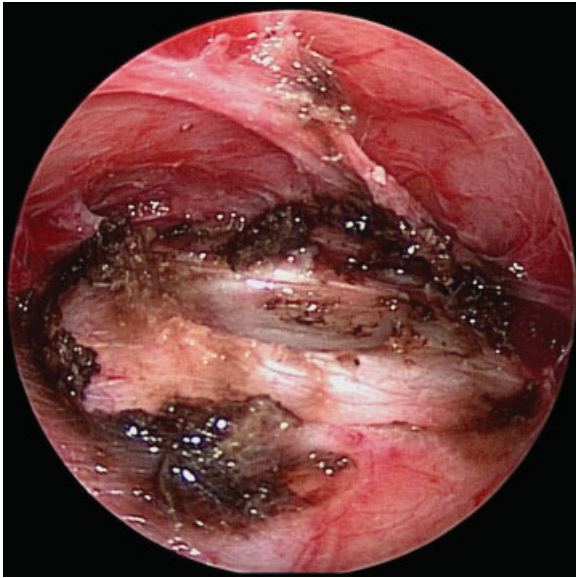


Fig. 3 After complete removal of the dermoid cyst, recurrence is unlikely.



Fig. 4 Excellent cosmetic results with covert scar hidden behind the hairline at 2-week follow up.

to head and neck surgery, and even truncal and extremity procedures in children.¹ In recent years, this technique is being increasingly incorporated into pediatric surgery.^{2,3}

Although external angular dermoid cysts are generally asymptomatic, surgical excision is the recommended treatment because over time there is risk of rupture, inflammation, and recurrence.⁴ Multiple approaches have been described for excising external angular dermoid cysts, such as a direct incision over the cyst or in another nearby natural crease.⁴ Incisions on the eyebrow have low complication rates but lower cosmetic satisfaction due to damage to surrounding hair follicles and eyebrow hair loss, prolonged erythema, and potential scar depression.³ Given that up to 7% of dermoid cysts in children occur in the head and neck region where overt scars or hypertrophic complications may be unacceptable to patients, a cosmetically superior yet clinically equivalent technique is required.⁵

Endoscopic head and neck surgeries have proven successful with reduced operating and recovery time, less blood loss, decreased risk of alopecia and paresthesias, and minimized scar length.⁶ Furthermore, these benefits make endoscopic approaches optimal for pediatric patients, especially in ethnic populations and younger patients who are more prone to hypertrophic scars or keloid formation.⁷ Our approach yielded excellent cosmetic results, with a covert scar hidden behind the hairline, and no surgical complications as well as no cyst recurrences.

These procedures can be accomplished using several approaches such as the subperiosteal, subgaleal, and subcutaneous approach. Depending on the location of the cyst, a subperiosteal approach would be below the plane of the cyst and hence not ideal. The subgaleal method carries increased risk of sensory nerve damage due to stretching of the skin with insufflation or during dissection.⁷ For example, in series report of 10 endoscopically removed dermoid cysts with open-technique dissection along the subgaleal plane, there were two reported cases of transient frontal nerve palsy.⁶ Therefore, although careful understanding of local anatomy can minimize paresthesias from minor nerve injuries, maintaining a subcutaneous dissection plane and utilizing endoscopic instruments are best for decreasing these risks while also providing the optimal access to the lesion. Since we used the subcutaneous approach with endoscopic instrumentation for dissection, there was better sensitivity and maneuverability, and thereby did not observe such complications in our series.

Additional complications include intraoperative rupture of the cyst, postoperative infection, and bruising. We had one case with intraoperative cyst rupture but no infection or bruising. Cyst rupture is a critical concern since complete removal of the dermoid cyst is essential to prevent recurrence.⁶ One advantage of endoscopic surgery is enhanced visualization and exposure, specifically the use of 3-mm instruments and telescope provides excellent maneuverability in the limited space, which makes thorough removal of a ruptured cyst possible. In our experiences, there were no cases of postoperative bruising as adequate hemostasis was achieved using meticulous cautery of all small bleeding vessels. There have been reports of infection requiring drainage; however, we had no cases of infection so far in our series and therefore have not found it necessary to leave drains.⁷

One limitation to the subcutaneoscopic technique is its applicability to a limited patient population. Subcutaneoscopic excisions are most suited to individuals with well-defined lesions, such as dermoid cysts, and should not be used for ill-defined lesions. Other disadvantages of this technique include longer operative times during initial training and the slightly increased cost (instrumentation) and resources (physician and staff training).⁸ The operative time progressively reduces once the surgeon is past the learning curve. Furthermore, improved cosmesis and patient satisfaction ultimately balances out the slightly increased cost.

In conclusion, the subcutaneoscopic technique has the advantage of improved visualization of the cyst, greater precision of dissection, and excellent cosmesis. A similar case series was reported by Agrawal et al, which described

similar success with this technique of subcutaneoscopy using endoscopic instruments.⁹ One disadvantage is that this involves learning a new technique while the majority of surgeons are already comfortable with the open approach. However, it should be noted that basic laparoscopic skills translate well to this technique and competence can easily be achieved after only a few cases. Given the safety and efficacy seen with the 11 cases we have studied, along with other similar subcutaneoscopic procedures, this technique has tremendous possibilities. Nevertheless, a larger series should be published before definite general recommendations can be given.

Conflict of Interest

None.

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