The endoscopic approach to remove dermoid cysts in the face: 
the surgical technique sistematization

A sistematização da cirurgia videoassistida na extirpação de cistos dermóides da face

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ABSTRACT

Objective: To describe the application of video-assisted surgery to remove dermoid cysts in the frontal and periorbital areas. Methods: From 1994 to 2005, 13 children were submitted to this procedure. Two 0.5-cm scalp incisions were placed 1 cm behind the frontal hairline; the incisions were 3-cm apart. A subperiosteal dissection was performed to reach the tumor. The cyst was removed under direct vision. Results: All lesions were completely removed. The operative time did not exceed 60 minutes. The tumors measured 1 to 3 cm in diameter. There were no complications and the aesthetic result was considered satisfactory without visible scars. Conclusions: The video-assisted approach to pediatric dermoid cysts in the face is effective and results in no visible facial scars. It is a safe procedure. Direct vision excision assures complete removal of the tumor.

Keyword: Dermoid cyst/surgery; Orbital neoplasms/surgery; Facial neoplasms/surgery; Video-assisted surgery/methods

INTRODUCTION

There are various acquired and congenital tumors of the face that should be treated by surgical extirpation. The most common tumors are lipomas and dermoid cysts, but others may occur, such as bone tumors, especially in the frontal area.

The surgical techniques are well known and difficulty in performance depends on tumor depth and its adherence to surrounding tissues. The quality of scarring depends on tumor dimensions and direct vision of dissecting margins. Dermoid cysts may recur if the tumor is not totally removed (1).

The dermoid cysts in the glabella and nasal regions could be part of a structure that crosses the bone tissue and have deeper connections towards the cerebral tissue. Hence, it is crucial to make an accurate preoperative diagnosis to determine the management (2).

Dermoid cysts in the orbital, eyebrow and frontal areas are usually small and their surgical excision is technically simple. However, patients and mainly parents, in pediatrics cases, show increased anxiety in relation to resulting scars.

As a general rule, the incisions must be performed so as to be well camouflaged or in skin folds, such as eyelids or upper margin of eyebrows (3). However, when the tumor is situated above the eyebrow, the approach in the upper margin may not provide good visibility and make the procedure difficult. It may also be located very laterally to the orbit hindering choice of the best position for incision, since in younger children the position of eyebrow hairs is still not definite.
Video-assisted surgery has been increasingly used in plastic surgery to avoid unaesthetic incisions or to facilitate the procedure\(^{4-9}\). This article reports our clinical experience with scalp incisions and the use of video-assisted surgery to remove dermoid cysts in the frontal and periorbital regions to avoid scaring in visible areas.

**METHODS**

Two 0.5 cm incisions are marked 1-cm behind the frontal hairline, and 3-cm apart from each other and at an equal distance from the tumor site (figure 1).

![Figure 1. Intraoperative view. Marking incisions and direction of access tunnels.](image1)

The incision must involve the skin and subcutaneous tissue; in the temporal region, it should be deep enough to meet the space between the superficial and deep temporo-parietal fasciae. From this space on detachment is performed until reaching the tumor region. If the incision is out of the temporal muscle area, the subperiosteal level must be reached, and then detachment is accomplished until the tumor margin to find the first incision tunnel.

After meeting the two levels, the lens is placed in one incision; the other incision is used for dissecting armamentarium (figure 2). After detecting the cyst margin by palpation, 3 cm apart from the tumor, a periosteal opening is made with blunt-tipped scissors to see the tumor margin and start dissection.

![Figure 2. Intraoperative view with dissection and optical instruments](image2)

In some dermoid cysts in the periorbital region we observe firm adhesions to the muscular tissue in the lateral and upper margins, and an even firmer adhesion to the periosteum – in these cases it is necessary to perform a careful detachment to avoid tumor rupture.

Tumors must be completely released from the surrounding tissues and then removed (figure 3). When dermoid cysts are larger than the incision, they should be opened and their contents released. The area should be cleaned to remove any debris. The cyst envelope is removed with an endoscopic hemostatic forceps.

![Figure 3. Endoscopic view of dermoid cyst in periorbital region attached to muscular tissue and periosteum](image3)

Next, the incision margins are sutured in two layers using a 5-0 polyglactin thread; on the skin, 6-0 non-absorbable mononylon suture is used to protect the internal knots. Surgical glue could be used to enhance adhesion of the margins and impermeability (figure 4).

![Figure 4.](image4)

**RESULTS**

From January 1994 to January 2005, 13 children (age range of 6 months to 11 years) with dermoid cysts in the frontal and periorbital areas were operated on. All patients required only two incisions measuring at most 8 mm. The smaller tumor measured 10 mm in diameter and the largest, 35 mm. All cysts were completely excised but 7 required previous release of content. The surgical procedure lasted from 40 to 60 minutes. There were no complications (chart 1) and the scars were considered satisfactory, covered by hair and not visible (figures 5 and 6).
The endoscopic approach to remove dermoid cysts in the face: the surgical technique systematization

**Chart 1. Relation of patients submitted to surgery**

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Site</th>
<th>Longest axis (mm)</th>
<th>Duration of surgery (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 year</td>
<td>Left eyebrow, lateral margin</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>2</td>
<td>7 years</td>
<td>Right eyebrow, lateral margin</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>3 years</td>
<td>Left eyebrow, lateral margin</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>10 months</td>
<td>Left eyebrow, lateral margin</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>5</td>
<td>11 years</td>
<td>Frontal region, 2-cm apart from upper eyebrow margin</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>1 year</td>
<td>Right eyebrow, upper lateral margin</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>8 months</td>
<td>Right eyebrow, medial margin</td>
<td>30</td>
<td>55</td>
</tr>
<tr>
<td>8</td>
<td>2 years</td>
<td>Left eyebrow, medial margin</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>9</td>
<td>2 years</td>
<td>Right eyebrow, lateral margin</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>7 years</td>
<td>Mid-frontal region</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>11</td>
<td>3 years</td>
<td>Right eyebrow, lateral margin</td>
<td>25</td>
<td>55</td>
</tr>
<tr>
<td>12</td>
<td>9 years</td>
<td>Frontal region, 2 cm apart from upper margin of right eyebrow</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>13</td>
<td>6 months</td>
<td>Right eyebrow, lateral margin</td>
<td>20</td>
<td>55</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The endoscopic resection of tumors on the face has some advantages compared to direct approach, especially in the periorbital region, to avoid visible scars. Moreover, it enables full view of the tumor and its limits, ensuring complete removal even if attached to bone or muscular tissues. Choosing a safe level – either subperiosteal or subgaleal – provides an excellent vision for dissection, thus avoiding injuries in arteries and nerves.
The disadvantages are the high cost of the armamentarium and the need of surgeons to be trained in video-assisted techniques.

General anesthesia is necessary in younger children in both endoscopic and conventional surgery.

The operative time is longer as compared to usual techniques; however, in our experience it did not exceed 60 minutes, which is not much longer than duration of direct incision procedures reported in the literature. Although video-assisted techniques may take longer than conventional procedures, they bring some advantages that make it more effective and systematic, such as reduced morbidity, smaller incisions with consequent faster suturing, more precise dissection.

CONCLUSIONS

Most tumors on the face are small and require direct surgical excision. Nevertheless, other lesions, particularly dermoid cysts in the frontal and periorbital areas, may be removed by video-assisted surgery in order to avoid visible scars and aesthetic results. The standardization of the technique makes it easier and helps teaching and training other surgeons.

REFERENCES