A Suitable Device for Cystic Lesions Close to the Tooth-Bearing Areas of the Jaws

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Different devices for decompression of cystic lesions of the jaw have been described in the literature. Although there are no rigorous rules for choosing a particular design or method, the choice depends on situational needs. Although minor, most techniques are associated with certain difficulties and complications, such as the need for long-term monitoring, inappropriate decompression tube size, soft tissue trauma, suture dehiscence, soft tissue invagination, dislodgement, and malpositioning of the tube into the lesion. These complications may have a negative impact on the level of treatment acceptance, especially when devices are used over long periods. The aim of this study was to present a new suitable device for cystic lesions close to tooth-bearing areas of the jaws.

Decompression of odontogenic cystic lesions, a relatively simple and common procedure, may be performed as a definitive treatment modality or as an adjunct to other surgical techniques.1,2 The procedure decreases the lesion, facilitating subsequent enucleation, and lowers the risk of recurrence.2 Several devices have been used successfully for decompression, as described in the international literature.1-6 However, most techniques are associated with certain difficulties and complications, such as the need for long-term monitoring, inappropriate decompression tube size, soft tissue trauma, suture dehiscence, soft tissue invagination, dislodgement, and malpositioning of the tube into the lesion.3 Although minor, these complications have a negative impact on a patient’s quality of life during treatment and on the level of treatment acceptance, especially when devices are used over long periods.1

Thus, the aim of this study was to present a new suitable decompression device for odontogenic cystic lesions close to tooth-bearing areas of the jaws.

Technique

Unlike previously described decompression devices, the device in the present design is attached with resin to the crown of a tooth adjacent to the area requiring decompression. Initially, a segment of polyethylene suction tube is prepared according to the radiographic size of the lesion. Using a disposable needle, a hole is drilled near the extremity, large enough to allow the passage of a 0.8-mm orthodontic stainless steel wire. With the aid of a needle holder, one end of the wire is shaped into a loop and the other end is inserted through the hole in the tube, pulled back, and twisted (Figs 1, 2). Subsequently, the tooth crown is etched with acid and the loop is attached to the dental surface with composite resin (Fig 3). If necessary, the loop may be repositioned later for improved stability, control of surgical cavity depth, and adaptation to wound margins, thereby preventing adjacent soft tissue invagination into the lesion, which is a well-known postsurgical complication (Fig 4).
Because the device will be maintained for a long period, the patient is advised to perform careful intrale-sional hygiene 3 times a day with a disposable syringe containing a 0.12% chlorhexidine solution.

Discussion

Different devices for decompression of cystic lesions of the jaw and maintenance of the surgical win-dow have been described in the literature (Table 1). Although there are no rigorous rules for choosing a particular design or method, the choice depends on situ-tional needs. The devising described in the present report is suitable for cystic lesions close to tooth-bearing areas of the jaws.

Decompression devices have traditionally been at-ached to the surrounding soft tissue with sutures. This fixation method provides insufficient stability in case of surgical wound dehiscence. Poor adjust-ment increases the likelihood of device-related comp-llications mainly caused by micromovements.1,3 Thus, Kolokythas et al1 attached the device to the cervical margin of the tooth using steel wire, whereas Swantek et al3 and Catunda et al6 used bone screws. However, although the former tech-nique favors dental plaque buildup and periodontal injury from direct trauma, the latter is relatively costly and skill-intensive. As shown in this report, the attachment of the device to the crown of an ad- jacent tooth provides greater stability and minimizes the need for additional surgical interventions related to poor adjustment or invagination into the surgical cavity.

FIGURE 1. One end of the orthodontic stainless steel wire is shaped into a loop.

FIGURE 2. The other end of the orthodontic stainless steel wire is inserted through the hole in the tube, pulled back, and twisted.

FIGURE 3. The loop is attached to the acid-etched dental surface with composite resin.
According to Tolstunov, the following characteristics are ideal for decompression devices: 1) have a design that prevents the device from falling into the bone cavity or coming out from the cavity at the end of the procedure, 2) be small enough and not interfere with daily mastication, 3) be fixated easily to the surrounding soft tissue, 4) provide easy daily cleaning of the cystic cavity through its opening by the patient or staff, and 5) be hygienic and not accumulate food particles while in use. Thus, the authors believe that the present device is a simple method that matches all the requirements of a decompression device, thus avoiding an increased risk of postoperative morbidity and the need for new surgical procedures.

Table 1. DECOMPRESSION DEVICES DESCRIBED IN THE INTERNATIONAL LITERATURE

<table>
<thead>
<tr>
<th>Reference</th>
<th>Material</th>
<th>Fixation Method</th>
<th>Tissue</th>
<th>Minor Limiting Factor</th>
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</thead>
<tbody>
<tr>
<td>Enislidis et al.⁵, 2004</td>
<td>shortened polyethylene tubes</td>
<td>suture</td>
<td>mucosa</td>
<td>micromovements and device displacement</td>
</tr>
<tr>
<td>Pogrel and Jordan,² 2004</td>
<td>shortened nasopharyngeal tube</td>
<td>suture</td>
<td>mucosa</td>
<td>micromovements and device displacement</td>
</tr>
<tr>
<td>Tolstunov,⁴ 2008</td>
<td>shortened nasal oxygen cannulas</td>
<td>suture</td>
<td>mucosa</td>
<td>micromovements and device displacement</td>
</tr>
<tr>
<td>Kolokythas et al.¹, 2011</td>
<td>polyethylene intravenous tube</td>
<td>ligature wire</td>
<td>teeth (at level of mucogingival junction)</td>
<td>periodontal trauma</td>
</tr>
<tr>
<td>Swantek et al.³, 2012</td>
<td>suction tubing plastic connector</td>
<td>2 screws, 1.2-mm suture</td>
<td>bone, mucosa</td>
<td>special microscrews and screwdrivers</td>
</tr>
<tr>
<td>Catunda et al.⁶, 2013</td>
<td>Luer syringe</td>
<td>2 self-tapping screws, 1.2- or 1.5-mm suture</td>
<td>bone, mucosa</td>
<td>special microscrews and screwdrivers</td>
</tr>
</tbody>
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References