Preliminary report of a new method of cleft palate repair

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Summary—A new method of cleft palate repair is described and the preliminary results of its use in five consecutive cases reported.

Our present-day techniques of palate repair are derived from methods developed by Langenbeck (1861), Veau and Ruppe (1922) and others under the constraints of 19th century anaesthesia and instrumentation. All the procedures result in extensive scarring of the oral mucosa, which is probably responsible for the associated skeletal deformities of the dental arch form. The apparent shortage of palatal tissue in the cleft child has meant that these techniques, with their extensive mucosal incisions, have persisted despite advances in anaesthesia and other operating conditions. Along with others we would like to challenge the concept of tissue shortage in the majority of clefts.

The operation described in this paper has demonstrated in an unselected, consecutive series of five cases (Table 1) that it is possible to achieve closure without the need for the scars of extensive lateral releasing incisions in the mucosa.

Table 1

<table>
<thead>
<tr>
<th>Patient</th>
<th>Type of cleft</th>
<th>Age at operation</th>
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<tbody>
<tr>
<td>NA</td>
<td>Secondary palate</td>
<td>9 months</td>
</tr>
<tr>
<td>PM</td>
<td>Complete unilateral</td>
<td>9 months</td>
</tr>
<tr>
<td>BW</td>
<td>Complete unilateral</td>
<td>7 months</td>
</tr>
<tr>
<td>JB</td>
<td>Secondary palate</td>
<td>8 months</td>
</tr>
<tr>
<td>AG</td>
<td>Complete unilateral</td>
<td>9 months</td>
</tr>
</tbody>
</table>

Method

The palate repair has been performed at between 7 and 9 months of age. Under general anaesthesia a Dott's gag is placed in the mouth to expose the palate. Cocaine packs and local anaesthetic with adrenaline are used to minimise bleeding.

The junction between the oral mucosa and the nasal mucosa (Fig. 1A) along the edges of the cleft is incised on both sides. In the soft palate, this incision is taken down to the muscle but no dissection of the muscle is made. Anteriorly the incision is carried down to the margin of the bony shelf of the hard palate. Using a sharp elevator, the mucoperiosteum is elevated from the bone as far laterally and anteriorly as the alveolus. The nasal mucosa is similarly elevated from the bone of the hard palate and from the lateral nasal wall as required. A vomerine flap is used to provide nasal lining. The subperioseal and submucosal dissections are then extended in the same plane around the posterior or trailing edge of the palate. This releases the muscle attachments from the posterior border of the hard palate and permits the elevation of the mucosa from the medial aspect of the medial plate of the pterygoid (Fig. 2). By now the vascular pedicle of the greater palatine vessels should be visible and this can be dissected free in the conventional manner.

The nasal layer is closed (Fig. 1B); blood loss can be minimised if it is done at this stage. At this point the dissection is no different from the conventional palate dissection other than the absence of the lateral incisions along the medial aspect of the alveolus.

With a skin hook providing tension on the mucoperiosteum and using an angled blade, the periosteum is incised with a number of cuts (Fig. 1B). The main cut is lateral to the vascular pedicle and parallel to the alveolus. Several smaller cuts can be made medially, dividing the periosteum into strips radiating from the vascular pedicle. Under magnification and with care, the periosteum over the vessel can be released without vascular damage. The tension in the skin hook will be felt to “give” when the periosteum is adequately divided.

The cleft is then sutured using 4/0 chromic catgut or 5/0 Vicryl, commencing at the posterior end and proceeding anteriorly. The nasal layer is repaired.
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Figure 1 — Diagrams illustrating the palate repair. (A) The junction between the nasal layer (stippled) and the oral layer in the cleft. (B) Repair of the nasal layer prior to incising the periosteum on the underside of the palatal flaps. (C) The completed repair with only a midline suture line.

separately. Using a vertical mattress suture, the muscle and the oral mucosa are brought together in the midline (Fig. 1C). It is usually possible to evert the edges of the oral mucosa slightly. No ‘A’ suture (Peet, 1961) is used as there has been no separation of the muscle from either the oral or the nasal layers.

The alveolar cleft is not repaired either at the primary lip repair or at the palate repair and this provides an avenue of escape for any potential haematoma. Repair of the alveolar cleft is planned at the time of the alveolar bone graft, by then it is hoped that the segments will be in correct alignment allowing easy apposition of the gingival mucosa.

Results

To date five palates have been repaired using the method described above. As can be seen from the Table, two were of the secondary palate only and three were complete unilateral clefts. The operations were performed between 7 and 9 months of age. All repairs have remained intact (Figs 3–7).

Discussion

When these palates are examined several months postoperatively the “normality” of appearance is striking. If the mucosal scars are responsible for the

Figure 2—(A) Photograph with (B) explanatory drawing demonstrating the possible exposure with this palate repair. Dott gap (DG), tongue depressor blade (TD), upper lip (L) with recent lip repair scar, hard palate (HP), right palatal flap (RPF) retracted by skin hook (SH) to expose hard palate and exhibiting the greater palatine artery on its deep surface. A Mitchell trimmer (MT) is here retracting the soft palate (SP) muscles to expose the medial wall of the medial pterygoid plate. Left palatal flap (LPF).
Figure 3—*Patient NA*. (A) Unrepaired palate. (B) Immediate postoperative view demonstrating excessive eversion of wound edges. (C) 7 months post-operation.

Figure 4—*Patient PM*. (A) Unrepaired palate. (B) Immediate postoperative view. (C) Palate at one week.

Figure 5—*Patient BW*. (A) Unrepaired palate. (B) One week post-operation. (C) 4 months post-operation.
deforming force that so commonly distorts the repaired cleft palate, we hope that these children can expect minimal arch collapse and unfettered soft palate function.

There is no reason why the more radical muscle dissections described as "intra-velar veloplasty" (Kriens, 1970) cannot be added to this procedure if it is wished. We prefer to approximate the muscle across the midline with minimal trauma and rely upon the physiological action of "pull back" to achieve the necessary soft palate lengthening.

With no raw surfaces in the mouth, pain in the postoperative period should be reduced. No objective evidence has been obtained in this small series but subjectively the children appear to tolerate the procedure well and to re-establish distress-free feeding early. We feel that with experience this should lead to earlier discharge and indeed one child was discharged on the 4th postoperative day. The remainder were discharged earlier than our previous routine of 10 days.

No palate repair breakdown has occurred and in part this may be attributed to the broad-based nature of the palatal flaps. In the event of breakdown or fistula formation any further intervention will not have been compromised by this
technique. The small unrepaired alveolar cleft has not so far given rise to significant problems. As yet no disadvantages have been discerned. Indeed it would be possible, if thought necessary during the operation, to convert to any of the more commonly employed methods, e.g., Veau, Langenbeck, and therefore experience and understanding of palatal surgery are necessary.

To date we have not had the opportunity to apply this method to a bilateral cleft. However, we feel that little modification of the technique would be required. It is too early to draw any firm conclusions with regard to secondary skeletal deformity or speech competence.

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