Hemostatic pause' in pediatric tonsillectomy?

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Abstract

A randomized prospective study was performed on 101 children undergoing dissection tonsillectomy in two different sequences. In the 'pause' sequence, a period of inactivity lasting 1.5 min ('hemostatic pause') with the Boyle-Davis gag relaxed and the fossae packed with gauze swabs was implemented after the tonsils were excised. Hemorrhage was controlled exclusively by ligatures. The duration of tonsillectomy and the number of ligatures used were accurately recorded. The procedure was identical in the 'no pause' group but the pause period was omitted. No reactionary haemorrhage occurred. There was no significant difference in the operating time between the two groups, but the mean number of ligatures required was significantly reduced in the 'pause' sequence. We conclude that 'hemostatic pause' in tonsillectomy reduces the amount of ligatures needed for satisfactory hemostasis.

Keywords: Hemorrhage; Hemostasis; Tonsillectomy

1. Introduction

Tonsillectomy is inevitably associated with some intraoperative haemorrhage. The excision techniques affect blood loss and the guillotine method was reported to...
produce less bleeding than dissection [3]. The amount of blood loss is checked by the complex normal hemostatic mechanisms involving hemostatic plug formation, clotting and vasoconstriction. Surgical control of further bleeding is usually accomplished by coagulation diathermy or ligation. The hemorrhage immediately after dissection tonsillectomy is potentially severe. However, firm packing of the bleeding fossae with a gauze swab for 2–3 min (‘hemostatic pause’) may help spontaneous cessation of bleeding from smaller vessels [1] although there are no clinical trials to support this. A prospective study was therefore conducted to investigate if ‘hemostatic pause’ can improve the vascular control of tonsillectomy and shorten the duration of the procedure.

2. Patients and method

Children admitted for tonsillectomy were prospectively entered into the study. Dissection tonsillectomy was performed by one surgeon (WCL) and bleeding was ultimately controlled exclusively with ligatures.

The duration of each tonsillectomy was accurately timed by an electronic stopwatch. Timing started as the first mucosal incision was made. The right tonsil was first removed by blunt dissection and the tonsillar fossa packed firmly with a gauze swab. The procedure was repeated on the left side. The patient was then randomly allocated into one of the following groups.

2.1. Pause group

In the ‘pause’ group, the Boyle-Davis gag was relaxed and the gauze swabs left in situ. After waiting for 1.5 min (pause period), the blood-stained packs were replaced with new packs. Any bleeding areas in the right tonsillar fossa were carefully ligated with linen ties to obtain satisfactory hemostasis. The same process was repeated on the left side. Once the operating surgeon was satisfied with the hemostasis, the end-point for the procedure was declared and the duration of the entire procedure was recorded to the accuracy of 1 s while the clock was allowed to run on without interruption. Before the gag was finally removed, the surgeon was allowed to examine the fossae. If further bleeding was noted, more ligatures would be applied. In this case, the surgeon would have to declare another end-point for the procedure as the hemostasis was completed. The second declaration for the end of the procedure would be regarded as the true ending. The duration of the procedure would be measured from the moment of incision to the second end-point for the purpose of the study and the first reading would be discarded. The surgeon was unaware of the duration of the operation recorded by trained theater staff and a timing device was not available to him during the procedure.
2.2. No pause group

In the ‘no pause’ group, the sequence of dissection, application of ligatures, the declaration of completion of tonsillectomy and time keeping was the same as the ‘pause’ group except that the pause period was omitted.

The duration of tonsillectomy and the number of ligatures required for each patient were noted. The results between the groups were compared using Student’s t-test.

3. Results

The study involved 101 patients comprising 53 female and 48 male. The mean age was 6.4 years (range 3–12 years). The median age was 6.3 years for the female and 6.5 years for the male. All patients completed the study and no reactionary haemorrhage occurred.

The number of patients in each group, the mean duration of tonsillectomy and the mean number of ligatures used for complete hemostasis are shown in Table 1.

4. Discussion

In this study, the mean duration of tonsillectomy had not been significantly altered regardless of whether the tonsillar fossae were packed for 1.5 min or not following dissection tonsillectomy. The mean total number of ligatures required was significantly reduced in the ‘pause’ group. This indicated that a short period of inactivity after tonsillectomy allowed natural hemostasis to occur and reduced the need for ligation of bleeding areas in the tonsillar fossae.

Potentially a longer pause is more effective for haemostasis, since the normal bleeding time after small vessel injury is 1–9 min [4]. In this study, dissection tonsillectomy was completed in approximately 11 min, on average, and imposing a longer pause may limit the throughput of the operating session. Excessive reliance on natural hemostasis may be complicated by an increased incidence of reactionary haemorrhage since the hemostatic plugs for larger damaged vessels could dislodge

Table 1
Summary of results

<table>
<thead>
<tr>
<th></th>
<th>‘Pause’ group</th>
<th>‘No pause’ group</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>48</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Mean duration of tonsillectomy in min (range)</td>
<td>11.27 (6.40–23.00)</td>
<td>11.31 (6.22–23.30)</td>
<td>Not significant</td>
</tr>
<tr>
<td>Mean total number of ligatures applied</td>
<td>3.88</td>
<td>4.79</td>
<td>0.03</td>
</tr>
</tbody>
</table>
post-operatively and vasoconstriction gives way to vasodilatation 5–10 min after tissue injury [2], but this has not been shown in tonsillectomy, specifically. The 'pause' technique described in this study was not associated with any reactionary haemorrhage and it is at least as safe as 'no pause' tonsillectomy. Although we may be criticised for not recording intraoperative blood loss, we feel that the number of ligatures used to control bleeding which was accurately measured would reflect the efficacy of vascular control.

This study showed that packing the tonsillar fossae for a short period post-tonsillectomy improves natural hemostasis as indicated by a reduction in the number of ligatures used. The 'pause' technique in dissection tonsillectomy does not slow down the procedure and it can reduce the amount of suturing materials introduced into the tonsillar fossae if ligation is the preferred method for haemostasis. We conclude that it is helpful to allow some time for natural hemostasis to act before more active attempts to control tonsillar haemorrhage in pediatric tonsillectomy.

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References