Performance of Parotidectomy in Nonspecialist Centers

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Objective: To ascertain whether parotidectomy could be safely performed in smaller centers. The results of parotid surgery in a smaller center were reviewed and the major outcome measures compared with the results in the English literature from the best-known centers.

Design: Retrospective analysis of case series comprising 168 consecutive parotid surgical procedures in a district general hospital for a 15-year period (1985-1999). The follow-up ranged from 1 to 15 years with a mean of 8 years. Sixty-three patients had a follow-up of over 10 years. Revision procedures and surgery for malignant tumors were excluded from the study.

Setting: Warwick Hospital, a district general hospital in the United Kingdom, catering to a population of 300,000, with a case mix that is typical for a primary care hospital.

Main Outcome Measures: Permanent facial palsy, temporary facial palsy, and recurrence rate. Other variables included age, sex, name of the surgeon, histopathologic features of the specimen, duration of follow-up, and other complications.

Results: There were 154 consecutive operations within the study period, performed by 2 ear, nose, and throat surgeons and 1 general surgeon. Eight cases were excluded because of cancer or revision, yielding a final figure of 146 for analysis. There were 25 cases of temporary facial palsy and no incidence of permanent facial palsy during the study period. However, recurrence of the tumor was noted in 4 patients, all of whom opted for revision surgery with successful outcomes.

Conclusions: Parotid surgery for benign disease can be as safely performed in smaller centers as in larger centers. However, our study did not support the view that only a specified single surgeon should do parotid surgery, since there is no significant difference in the major outcome measures between different surgeons.


Centers of excellence are the norm in modern-day surgical care, and recent trends have shown that subspecialist interest in otolaryngology is gaining popularity. Consequently, certain cases are advocated to be performed in large centers, preferably by a single surgeon. Stapedectomy is a well-known example to illustrate the problem of a large number of surgeons available to operate on a small number of cases. Parotidectomy is technically demanding specialist surgery, since dissection of the facial nerve in both forms of parotid surgery (superficial and total) can be challenging.

In 1980, a general surgical group practice reported that the morbidity and the recurrence rate of parotid surgery were comparable with those of large published series. The other interesting observation of this small series of 47 cases over a 10-year period was that the operations were performed by more than 1 surgeon, implying that the number of cases for each surgeon is 2 or 3 per year. The evidence in other disciplines of specialist surgery is conflicting. Thomassen et al showed that small centers can improve the surgical outcome of coronary artery bypass grafting, and Ma et al reported that breast cancer management can be improved in smaller centers. Conversely, Clasby et al demonstrated that soft tissue sarcoma is best managed in specialist centers. The aims of the present study were to compare the...
results of parotid surgery in a small, nonspecialist center with international standards and to ascertain whether parotidectomy can safely be performed in such smaller centers.

### METHODS

In a retrospective review from 1985 to 1999, all the consecutive patients who underwent parotid surgery were identified from the histopathology database. Cases were excluded if surgery was performed for malignancy or recurrence following an earlier surgical procedure. The study group comprised 146 cases. Data were collected on age and sex of the patient, name of the surgeon, histopathologic features of the specimen, recurrence of the primary tumor, complications, and facial palsy (permanent or temporary). The data were then entered into an Access database (Microsoft Corp, Redmond, Wash), and appropriate analysis was performed and relevant tables and figures produced by the Department of Clinical Effectiveness at Warwick hospital, Warwick, England.

In all cases of superficial parotidectomy, a standard approach was used: a lazy S-shaped skin incision was performed, commencing at the front of the ear; the facial nerve trunk was identified early in the operation; the tumor from the facial nerve branches was mobilized; and a specimen was removed for histological examination. The wound was closed in 2 layers, and a drain was left in the wound. The drain was removed once drainage had stopped, and the wound was allowed to heal by granulation.

### RESULTS

Superficial parotidectomy was performed in 142 cases, and total parotidectomy with facial nerve preservation was required in 4 cases. Patient characteristics (N=146) are summarized below.

**Table 2. Major Outcome Measures Compared With Other Published Series**

<table>
<thead>
<tr>
<th>Source</th>
<th>No. of Cases</th>
<th>PFP, %</th>
<th>TFP, %</th>
<th>Recurrence, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>al-Naqee et al,2 1992</td>
<td>244</td>
<td>0.7</td>
<td>29.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Debets and Munting,15 1992</td>
<td>150</td>
<td>4</td>
<td>76</td>
<td>3.9</td>
</tr>
<tr>
<td>Kota et al,14 1991</td>
<td>74</td>
<td>6.4</td>
<td>16.2</td>
<td>13</td>
</tr>
<tr>
<td>Watanabe et al,13 1993</td>
<td>73</td>
<td>14</td>
<td>43</td>
<td>NR</td>
</tr>
<tr>
<td>Mehta et al,16 1993</td>
<td>246</td>
<td>3.9</td>
<td>46.1</td>
<td>NR</td>
</tr>
<tr>
<td>Laccourreye et al,17 1994</td>
<td>229</td>
<td>5.7</td>
<td>64.6</td>
<td>1</td>
</tr>
<tr>
<td>Deans et al,18 1995</td>
<td>50</td>
<td>4.0</td>
<td>8.8</td>
<td>6</td>
</tr>
<tr>
<td>Zbar et al,19 1997</td>
<td>110</td>
<td>5.4</td>
<td>41</td>
<td>15</td>
</tr>
<tr>
<td>Bron and O’Brien,9 1997</td>
<td>248</td>
<td>5.6</td>
<td>29</td>
<td>NR</td>
</tr>
<tr>
<td>Witt,10 1999</td>
<td>59</td>
<td>0</td>
<td>18</td>
<td>NR</td>
</tr>
<tr>
<td>Dulugeurov et al,11 1999</td>
<td>73</td>
<td>0.7</td>
<td>27</td>
<td>NR</td>
</tr>
<tr>
<td>Bradley,20 2001</td>
<td>258</td>
<td>1.9</td>
<td>26.9</td>
<td>NR</td>
</tr>
<tr>
<td>Present study, 2001</td>
<td>146</td>
<td>0</td>
<td>17.1</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Abbreviations: NR, not reported; PFP, permanent facial palsy; TFP, temporary facial palsy.

The most common indication of parotidectomy is a parotid mass necessitating a histological diagnosis. The most common cause of parotid mass is a benign tumor, the incidence of which is estimated to be 2.4 per...
The low incidence of parotid tumors and their management by a relatively large number of surgeons seem to have resulted in limited experience for individual surgeons. The aim of parotid surgery for benign disease is to remove the diseased gland while preserving the facial nerve function. However, facial nerve palsy can occur even in the best hands because of the intimate relationship of the facial nerve to the parotid gland. Several factors have been implicated in the etiology of transient nerve palsy, which include the extent of surgery, size and histological features of the mass, sectioning of the facial nerve or its branches, duration of the operation, surgeon’s experience, and age of the patient. In a multivariate analysis, only the age of the patient was found to have positive correlation with facial palsy. In a separate study, Laccourreye et al reported that none of these factors has statistical significance in producing facial nerve dysfunction or recurrence. Stretching of the nerve during the procedure was found to be the most probable mechanical factor causing impairment of microcirculation to the nerve and consequent metabolic block, resulting in transient facial palsy. Facial palsy could result in long-term disability for the patient, significantly compromising the quality of life. Even transient facial palsy has potential risks to the eye including exposure keratitis. However, in most cases facial weakness improves to normal or near-normal levels within 12 months. Indeed, it has been estimated that 18-month follow-up is required to assess the recovery of facial function after parotidectomy. In the few unfortunate cases of permanent facial palsy, it usually involves 1 or 2 branches, and the most common branch involved is the marginal mandibular. However, if the facial nerve is injured more proximally or if the nerve is sacrificed while removing a malignant tumor, the palsy can be global, involving all the branches.

Recurrence of the disease may occur even 10 years after surgery in cases of pleomorphic adenoma, which is the most common cause of benign parotid hypertrophy. Revision parotidectomy is indicated in these cases with attendant increased risks to the facial nerve. Poor surgical technique, rupture of the pseudocapsule, and the multicentricity of the tumor are some of the factors implicated in cases of recurrence. Since the surgical goal is to remove the disease process with preservation of facial nerve function, recurrence and facial palsy are considered to be the measures of failure in parotid surgery. There are a few encouraging reports of 0% permanent palsy, and the trend is toward achieving less than 10% temporary palsy.

During the study period, no incidence of permanent facial nerve palsy was noted, which is comparable with the best results in the literature. Incidentally, facial nerve monitoring was not used in any of the cases. However, a nerve stimulator was used in 36 cases in the later part of the series. No significant difference in the rate of facial palsy was noted in the 2 groups. Table 2 compares our results with the published results from other centers in English literature. We recognize the fact that the comparison may not be flawless, since the study population and criteria are different in each of these studies. If we could standardize the reporting of the facial palsy and recurrence after parotid surgery, this will go a long way in evolving higher surgical standards in the future.

Our study demonstrates that parotid surgery for benign disease can be as safely performed in smaller centers as in larger centers. Incidentally, we did not find any difference in the outcome between different surgeons performing different numbers of parotid surgery. However, we recommend that the outcome of surgery in smaller centers should be stringently reviewed on a regular basis and the results reported at national or international forums to maintain high surgical standards.

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REFERENCES

Comment

Umaphathy et al are conducting a health services equivalency study to determine whether parotidectomy can be performed in a community general hospital with outcomes similar to performing the surgery in a specialist center (tertiary or academic center in the United States). This is a retrospective series of 146 cases without cancer or revision surgery. The authors recorded the outcome for facial nerve function, recurrence rate, wound infection, and other complications. They compare their results with published results from other centers and find that their results are similar. They conclude that it is as safe to perform parotidectomy for benign disease in small centers as in large centers.

The authors acknowledge that the report is a retrospective series. All patients recovered normal function, so the lack of a method of recording facial nerve function is not a critical limitation. Data were acquired on all patients in the consecutive series, which is remarkable, though it is not clear how the data were recovered. It is also remarkable to have cooperation between 2 otolaryngologists and a general surgeon.

The main weakness of the study is its design. The authors have a vested interest in the results of the study. Even the most thoroughly honest investigators can be subject to unconscious sources of bias. The potential for bias is much greater in a retrospective study. The study has no control group or blinding of the observations. The differences in comorbidity and case selection between this and other studies cannot be assessed.

The question of the study is framed in terms of the setting of the surgery, which seems to be a surrogate for the skill of the surgeon. The latter is presumably a more critical issue for the treatment of a disease (benign parotid tumor) that does not require coordinated care of several specialists.

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