

Drainless Parotidectomies versus Conventional Parotidectomies: Randomised Control Study on Efficacy and Safety

Dear Editor,

The use of fibrin sealant for parotid surgery without drains has been described as having cost saving benefits and obviating drain-related morbidities.¹ It is known that the use of fibrin sealant in parotid surgery decreases drain output significantly, therefore allowing parotidectomies to be done with fibrin sealants but without drains.^{2,3} Until now, there has been no randomised case control study that examined the efficacy and safety of drainless parotidectomies performed with fibrin sealant and pressure bandage. This study aimed to evaluate the safety and efficacy of this technique.

Materials and Methods

This study was approved by an institutional review board. This was a prospective randomised case control study of 70 patients who had undergone a partial superficial parotidectomy performed by 1 surgeon at the Singapore General Hospital (SGH) from September 2007 to November 2011. Eligible patients were above the age of 18 years and had presented with a parotid mass that required partial superficial parotidectomies. The patients were randomised into 2 groups, A and B, using a computer-generated block randomisation. Group A consisted of 35 patients who had fibrin sealant sprayed on the parotid bed intraoperatively with the application of a pressure bandage postoperatively for 12 hours without surgical drains. Group B consisted of 35 patients who had conventional surgery with surgical drains without using fibrin glue or pressure bandage.

Patients who underwent total parotidectomies were excluded as it was not feasible to utilise a drainless parotidectomy technique with pressure bandage. This technique requires postoperative compression on the wound which may result in the facial nerve being compressed.

Surgical Technique

A standard modified Blair or a modified facelift incision was used and the partial superficial parotidectomy was done in the usual manner after a superficial musculoaponeurotic system-platysmal flap was raised. One millilitre (mL) of Tisseel[®] solvent containing clotting factors was mixed with 1 mL of human thrombin at a concentration of 4 IU/mL. The 2 mL reconstituted Tisseel[®] sealant, which takes 60 to

90 seconds to set, was then sprayed evenly on the parotid bed and the undersurface of the flap using a Tissomat spray device. This was sufficient to cover an area of up to 100 cm² which included the whole parotid bed. Manual compression on the parotid area was done for 5 minutes to allow the Tisseel[®] sealant to set adequately. The skin was then closed in the usual manner.

A parotid pressure bandage akin to a mastoid dressing for otological procedures was used for 12 hours postoperatively (Fig. 1). All patients were admitted postoperatively for 1 day. Both groups of patients were then encouraged to be discharged on postoperative day 1. The surgical drain used for all patients in Group B was a size 12 French Redivac drain. If they chose to be admitted, their surgical drains can be removed when the output is less than 30 mL from the second postoperative day onwards.

Results

The mean age of our patients was 50.8 years. Forty-one patients were female and 29 were male; 86% were Chinese (the majority race in Singapore), 6% Malay and 8% of other ethnicities. Between the 2 groups of patients, there was no statistically significant difference in terms of their biodata, comorbidities, histology of tumour and volume



Fig. 1. Parotid pressure bandage.

of parotid gland resected. Group A had an average of 50.4 cm³ of parotid gland tissue resected whilst Group B had an average of 52.3 cm³ of parotid gland tissue resected. Not surprisingly, the commonest histology was pleomorphic adenoma followed by Warthin's tumour (Table 1).

The mean duration of hospitalisation for Group B was 2.8 days compared to 1.1 day of stay for patients in Group A; this was statistically different ($P < 0.001$). In Group A, 2 out of 35 patients had requested to stay for an additional day in the hospital due to postoperative nausea. The remaining 33 patients were all discharged on postoperative day 1. In Group B, despite the offer of discharging the patient on postoperative day 1 with drains, most patients preferred to stay until drain removal which was typically on postoperative day 3 when the drain output was less than 30 mL. In terms of hospitalisation costs, hospital charges per day start at USD\$244 excluding medications, which could be variable. Based on the cost of Tisseel[®] sealant at USD\$219 per mL and surgical drains which cost USD\$65, the cost savings are:

Hospitalisation stay (Group A: 2.8 days - Group B: 1.1 days) x \$244 - Cost of 1 mL fibrin sealant and drain (\$219 - \$65) = USD\$260/patient.

For postoperative complications, facial nerve neuropraxia was commonest. All facial nerve palsies were temporary and all patients recovered to full facial nerve function within the next 6 months. There was no statistically significant differences between Groups A and B in terms of

postoperative complications (Table 2). The rate of sialocele was not higher in Group A (8.6%) as compared to Group B (11.4%) which might be expected when performing superficial parotidectomies without surgical drains.

Discussion

This is the first prospective, randomised, case control study that evaluated the safety and efficacy of performing superficial parotidectomies with fibrin sealant and parotid pressure bandage without the use of surgical drains. The other studies published were either prospective cohort study or a retrospective study, which could potentially introduce selection bias.^{1,4} We have shown significant cost savings of at least USD\$260 per patient, after taking into account hospitalisation costs per day, costs of surgical drains and fibrin sealant, but without taking into account medications and other consumables that are variable among patients. Patients also enjoy a shorter hospitalisation stay when using this drainless method and the hospital benefits from an improvement in the bed situation. Our hospital had a total of 105 superficial parotidectomies performed in 2011 across all departments and this could potentially translate to cost savings of 105 x USD\$260 = USD\$27,300 in 1 hospital alone per year.

Along with the lower costs and shorter hospitalisation stay, the postoperative complication rate was comparable between the 2 groups with no statistically significant difference. The main worry of sialocele when used to perform superficial parotidectomies without surgical drain was nullified since having a surgical drain does not exclude the possibility of a sialocele. In fact, the rate of sialocele was slightly higher with surgical drains in Group B (11.4%) compared

Table 1. Histology of Tumours

| Histology | n |
|-------------------------------------|----|
| Group A | 35 |
| Pleomorphic adenoma | 16 |
| Warthin's tumour | 8 |
| Acinic cell carcinoma | 4 |
| Oncocytoma | 2 |
| Basal cell adenoma | 2 |
| Mucoepidermoid carcinoma | 1 |
| Lymphoma | 1 |
| Metastatic nasopharyngeal carcinoma | 1 |
| Group B | 35 |
| Pleomorphic adenoma | 14 |
| Warthin's tumour | 8 |
| Acinic cell carcinoma | 5 |
| Oncocytoma | 3 |
| Mucoepidermoid carcinoma | 3 |
| Benign lymphoepithelial cyst | 1 |
| Cavernous hemangioma | 1 |

Table 2. Postoperative Complications

| Complications (Episodes) | % of Patients |
|--------------------------|---------------|
| Group A | |
| Facial nerve palsy | 40% |
| Sialocele | 8.6% |
| Skin numbness | 5.7% |
| Frey's syndrome | 2.9% |
| Total | 20 |
| Group B | |
| Facial nerve palsy | 31.4% |
| Sialocele | 11.4% |
| Drain site infection | 5.7% |
| Skin numbness | 5.7% |
| Frey's syndrome | 2.9% |
| Stitch granuloma | 2.9% |
| Total | 21 |

with Group A (8.6%) even though this was not statistically significant. The fibrin sealant has been shown in other studies to decrease drain output and this could potentially result in less sialoceles.^{2,5}

Interestingly, 2 patients within Group B had a drain site infection that was treated successfully with oral antibiotics and 1 patient had a stitch granuloma from the silk suture used to anchor the surgical drain. These are drain-specific morbidities that will not happen in patients who have undergone drainless parotidectomies.

Conclusion

Our study is the first prospective, randomised, case control study that compared safety and efficacy of partial superficial parotidectomies with fibrin sealants and pressure bandage to conventional surgery and drains. It is shown that it is cheaper to perform partial superficial parotidectomies with fibrin sealant and a pressure bandage with comparable safety. This group of patients had lower hospitalisation costs, shorter duration of stay and no increase in morbidities. This has changed our practice in our institution and most parotid surgeries are now being performed with this technique.

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