

# Drainless minimally invasive parotidectomy with tissue sealant.

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## Abstract

Abstract is not required if manuscript is submitted as *Clinical Experience*.

## Key Points:

\* Conventionally, formal superficial parotidectomy is conducted to remove parotid nodule. The facial nerve trunk is first identified followed by antegrade nerve dissection of its all 5 branches.

\*Minimally invasive parotidectomy in forms of partial parotidectomy or extracapsular dissection is equally effective in selected parotid nodules. The benefits encompass shorter operation duration and less complication.

\*Drainage is routine after formal superficial parotidectomy to prevent seroma or other wound complications. Its role in minimally invasive parotidectomy is not widely studied.

\*Tissue sealant could diminish seroma formation and enhance hemostasis. This study aims to evaluate whether tissue sealant could enable drainless minimally invasive parotidectomy.

\*No seroma formation was found in this series. Drainless minimally invasive parotidectomy appears safe with tissue sealant and thus day surgery is facilitated.

## Introduction

Driven by the advancement of surgical technique and operative adjuncts (loupes and intraoperative nerve monitoring device), parotidectomy is a safe and highly curable therapy, especially for benign parotid nodule. Minimally invasive surgery in the forms of partial parotidectomy (PP) or extracapsular dissection (ECD) have emerged and been gaining popularity as a viable alternative of traditional superficial parotidectomy (SP) [1]. The advantages of PP or ECD encompass shorter operation duration, less complications and feasibility of day procedure [2].

Conventionally, placement of drain following SP, PP or ECD is routinely practiced to prevent wound complications, such as seroma, siaolocale, hematoma or wound infection. However, this can aggravate wound pain and deter the conduct of day surgery. Tissue sealant has been shown to reduce drainage output after parotidectomy and thereby potentially enable drainless parotidectomy. Nevertheless, tissue sealant is not yet widely employed during parotidectomy.

Usage of tissue sealant for drainless parotidectomy has been adopted selectively in our institution at surgeons' discretion since January 2019. Prompted by its rewarding results achieved, it has become our routine practice since June 2021. We would like to share the technique and results in our institution. Informed consents were obtained from all patients for parotidectomy and usage of tissue sealant.

## Method

In general, we embraced to open minimally invasive parotidectomy: PP with retrograde facial nerve dissection or ECD. PP refers to facial nerve branches identification within the normal parenchyma 1-2cm from the tumour and are traced along their courses toward the facial nerve trunk prior to tumor removal with 1cm lateral margin [3], [4]. Whereas, during ECD, the facial nerve or its branches are not intentionally identified (unless encountered) and the tumor is extirpated with 1-2mm surrounding normal parenchyma with meticulous dissection [1]. Loupes and intraoperative nerve monitoring device are liberally used. PP or ECD could be conducted under either local or general anesthesia in our institution [5], [6]. Drain is regularly inserted if tissue sealant is not employed.

When tissue sealant is harnessed, before the closure of parotidectomy wound, the instillation catheter is placed under the skin flap. (Figure) The capsule of the remnant parotid is closed with absorbable suture, if possible, to further minimize the cavity resulted from surgery. The subcutaneous layer is then closed with absorbable sutures. Before suturing of the skin layer, tissue sealant is instilled into the wound via the instillation catheter. A gentle, sustained pressure is exerted for 5-10 min on the skin flap to create a thin but even tissue sealant to adhere the skin to parotid bed, so as to eliminate the intervening dead space and thus obviating seroma formation. Tisseel (Baxter, CA, USA) or Floseal (Baxter, CA, USA) were employed as the tissue sealant at surgeons' discretion. All procedures contributing to this work comply with the ethical standards of the institutional guidelines and with the Helsinki Declaration of 1975, as revised in 2008. Informed consents were obtained from all participants.

## Results

A total of 11 patients (5 male and 6 female patients) have received tissue sealant following parotidectomy. The last 8 cases were consecutive patients when tissue sealant was routinely given. Age ranged from 31 to 69. There were 4 ECD and 7 PP. 7 procedures are performed under local anesthesia while 4 under general anesthesia. The demographic, surgical, pathologic and outcome information were summarized in Table.

Noteworthy, there was no seroma in this series. One patient suffered from wound infection. There was no other wound complication. All but 3 patients were discharged on the same day of operation. Histopathology examination confirmed benign pathologies in this series: pleomorphic adenoma (N=5), Warthin's tumor (N=4), basal cell adenoma (N=1) and lipoma (N=1).

## Discussion

In a retrospective study on 2 cohorts of patients of routine drainage vs no drainage following conventional SS, Coniglio et al [7] showed that the seroma rate was higher in the no drainage arm, 3.8% and 9.5% respectively, if tissue sealant is not administered to both arms. Although the difference is not statistically significant, it may well be due to inadequate power of sample size.

In a randomized controlled trial, Maharaj et al [8] demonstrated that adding tissue sealant for parotidectomy will reduce drain output which suggests that tissue sealant is a potential substance for the success of drainless parotidectomy. Duffin et al [9], in a retrospective study comparing tissue sealant alone vs tissue sealant plus drainage, there is less hematoma in former arm while the seroma rate is similar. The results indicate that drainage might not be necessary if tissue sealant is given.

Our series supports the concept of drainless parotidectomy if tissue sealant is administered. This is a homogenous series of consecutive patients who underwent minimally invasive parotidectomy (PP or ECD) with a standard of surgical technique for benign parotid nodules. However, the sample size is small. Nevertheless, there is no single incidence of seroma formation. We fully understand the small size of our series and therefore we shall continue to recruit more cases in order to illustrate a robust benefit of tissue sealant. Unfortunately, COVID-19 pandemic has suspended many elective operations, including parotidectomy.

Tissue sealant is not the single reason to achieve drainless parotidectomy when other parameters are factored in. From our experience, transformation of SS to PS / ECD, as well as retrograde facial nerve dissection will also contribute to the success by diminishing the dead space through less extensive surgery [3], [4]. Similarly, parotidectomy under local anesthesia will facilitate day surgery [5], [6].

To conclude, employment of tissue sealant in parotidectomy is safe and appears to obviate routine usage of drainage. This will enhance the practice of day surgery. We shall continue to recruit more cases to validate the benefit in a larger series.

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## Legend:

**Figure.** The catheter is placed under the skin flap for instillation of tissue sealant before wound closure with skin sutures.



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