

## Evaluation of surgical treatment outcomes for dentigerous cysts using the Partsch II procedure

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### ABSTRACT

**Objective:** This study evaluated the postoperative outcomes of the Partsch II procedure (primary enucleation) in patients with dentigerous cysts treated at the Department of Odonto-Stomatology, Bach Mai Hospital, Vietnam, at 1-week and 3-month follow-ups. **Subjects and Methods:** A case series study was conducted on 31 patients diagnosed with dentigerous cysts and treated surgically using the Partsch II technique from August 2017 to August 2018. Clinical parameters assessed included swelling, pain, neurosensory disturbances, infection, and radiographic healing. Data were analyzed using SPSS 16.0, with statistical significance set at  $p < 0.05$ . **Results:** At 1 week postoperatively, 78.4% of cases showed good outcomes, 18.9% had mild complications (edema, transient paresthesia), and 2.7% exhibited poor outcomes (infection with flap dehiscence). By 3 months, 94.6% achieved complication-free healing, while 5.4% had residual hypoesthesia or inflammatory drainage. No recurrences were observed radiographically. The complication rate was significantly lower than comparative studies ( $p = 0.013$  at 1 week;  $p = 0.007$  at 3 months). **Conclusion:** The Partsch II procedure demonstrated high efficacy, with minimal recurrence and manageable complications. Its single-intervention approach reduced treatment duration and costs, supporting its suitability for dentigerous cyst management.

**Keywords:** dentigerous cyst, Partsch II procedure, surgical enucleation, postoperative outcomes.

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### INTRODUCTION

Dentigerous cysts, which named Paget in 1853, are among the most common types of odontogenic cysts encountered clinically, ranking second and account for approximately 24% of all odontogenic cysts affecting the jawbones [1-3].

Treatment of DC is mainly based on surgery, which can open the cyst to reduce pressure and then perform the second surgery (Partsch I), or radical surgery at the first stage (Partsch II). However, currently in Vietnam, research works to evaluate the results of Partsch II surgery in this pathology are still limited, including some topics such

as "Large jaw cyst due to teeth" - Thesis of resident doctor at Hanoi Medical University by Le Van Son, "Molar jaw cyst due to teeth" - Master's thesis of medicine at Hanoi Medical University (1997) by Nguyen Hong Loi [4,5] ...

Given this clinical gap, we conducted this study with the following objectives: To assess the postoperative outcomes of the Partsch II procedure in patients with dentigerous cysts treated at the Department of Odonto-Stomatology, Bach Mai Hospital, at 1-week and 3-month follow-up intervals.

### MATERIALS AND METHOD

Including 31 patients who were diagnosed with crown cysts and underwent surgical treatment at the Department of Odonto-Stomatology Bach Mai Hospital, regardless of age, gender, ethnicity, from 08/2017 to 08/2018.

### Subjects of study

**Inclusion criteria:** Patients with a diagnosis of crown cysts, with Partsch II surgical intervention, and patients who agree to participate in the study group.

**Exclusion Criteria:** Patients with systemic diseases that contraindicate surgery, the anatomical result of the disease is not a crown cyst.

### Study methods

**Study design:** The study was designed according to the cluster case study method. Applying a convenient sampling method,

there are enough biomedical statistical samples of at least 30.

**Data processing:** Data are cleaned, coded and entered using Epidata 3.1 software and then analyzed using SPSS 16.0 software. Variables are calculated in proportion with 95% confidence. The difference is statistically significant with  $p < 0.05$ .

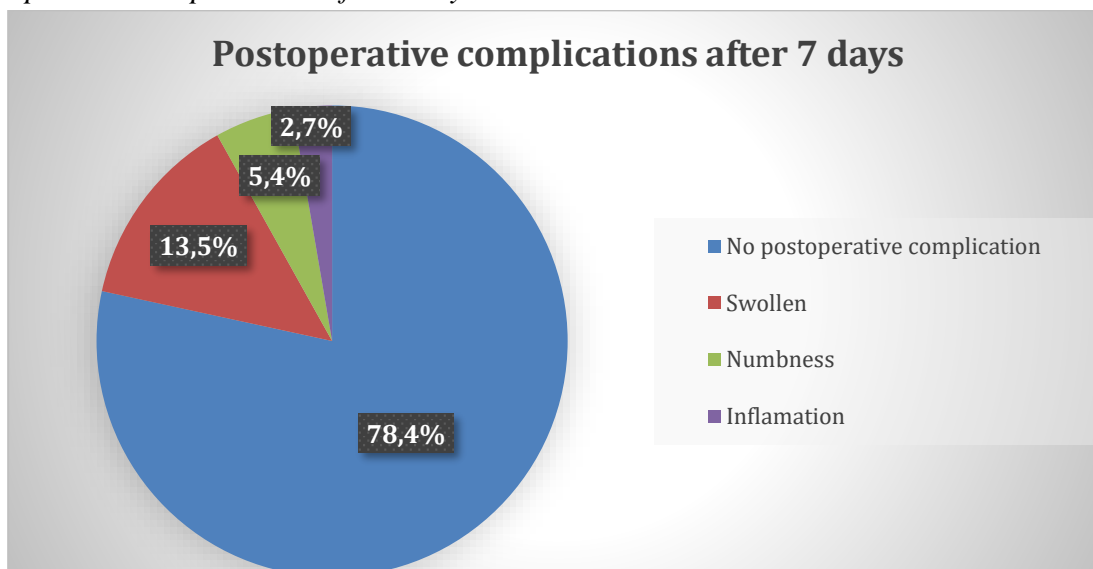
### Ethical considerations

We only conduct research on the topic when the detailed outline has been approved by the outline grading council of Bach Mai Hospital, the board of directors of the Department of Odonto-Stomatology. Patients voluntarily participate and patients' information is kept absolutely confidential. Research is purely for scientific purposes, not for any other purpose.

## RESULTS

### Treatment results after 1 week

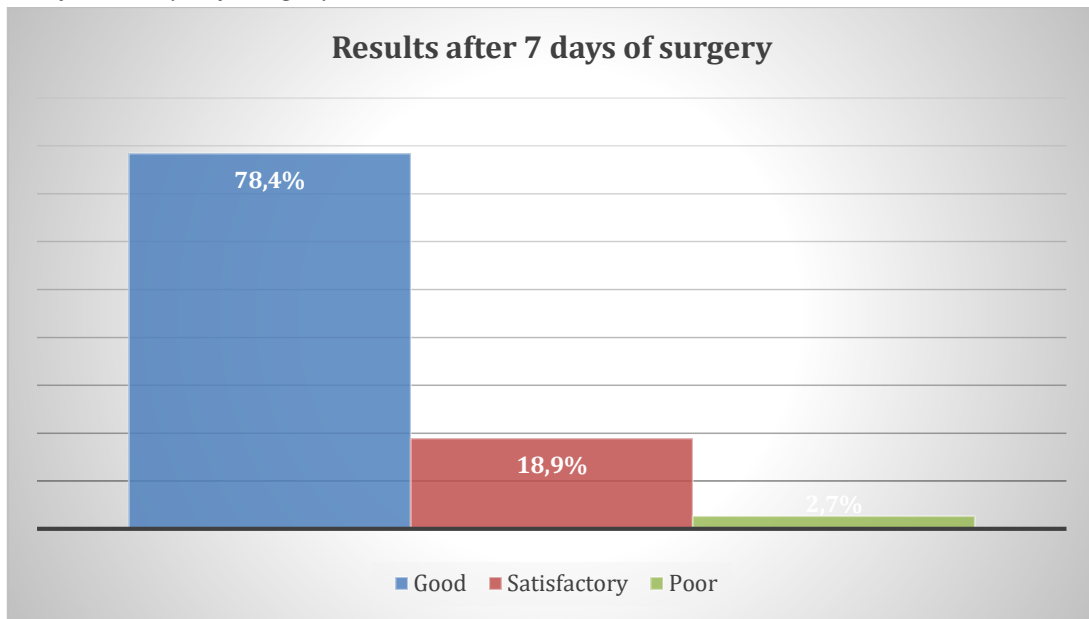
#### Postoperative complications after 7 days



**Chart 3.1.** Early complications after 7 days of surgery

**Comments:** At the 7-day postoperative follow-up, 78.4% of the dentigerous cysts showed no complications, a proportion 3.6 times higher than those with complications ( $p = 0.013$ , statistically significant). Among the eight dentigerous cysts with early postoperative complications, the following were observed: Persistent swelling in five cases, neurosensory disturbances (numbness) at the surgical site in two cases, mucosal flap perforation with purulent discharge in one case.

*Results after 7 days of surgery*

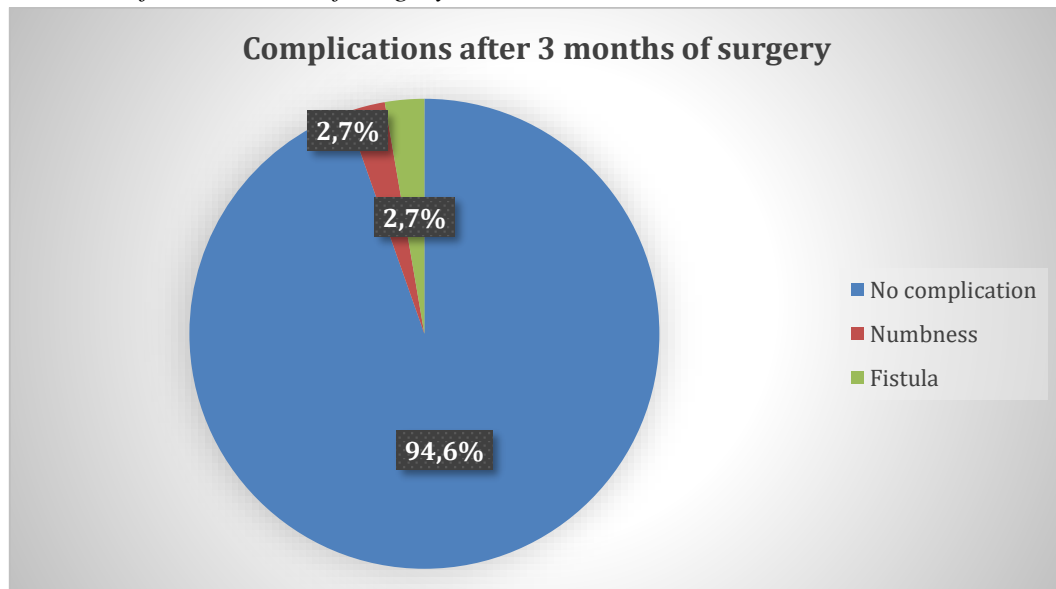


**Chart 3.2.** *Results after 7 days of surgery*

**Comments:** Postoperative assessment at 7 days: Good outcomes were observed in 78.4% of cases, satisfactory outcomes in 18.9%, and poor outcomes in 2.7%. Among cases with satisfactory outcomes, seven dentigerous cysts presented with mild postoperative complications, including localized edema and transient paresthesia. The single case (2.7%) with a poor outcome exhibited signs of infection, mucosal flap dehiscence and purulent exudate.

**Treatment results after 3 months**

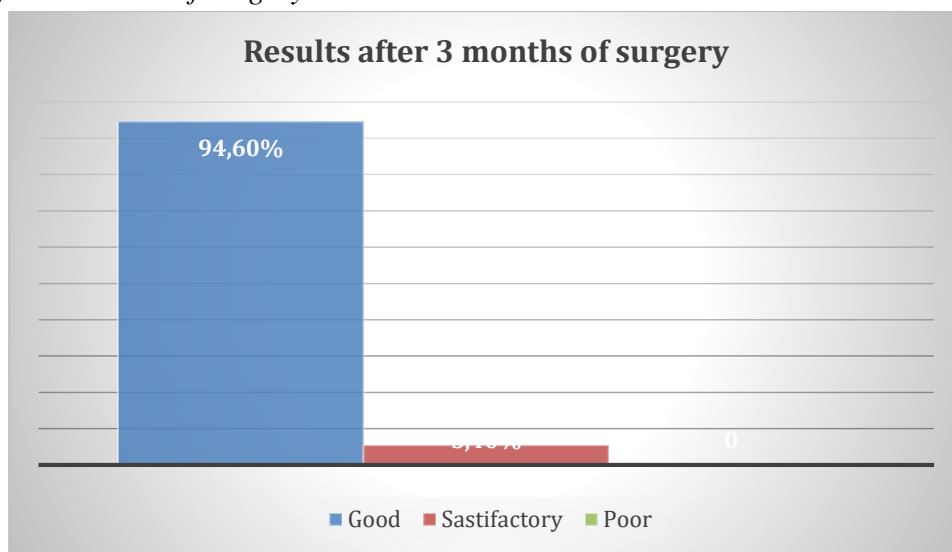
*Complications after 3 months of surgery*



**Chart 3.3.** *Late complications after 3 months of surgery*

**Comments:** Follow-up assessment at 3 months postoperatively, complication-free healing was achieved in 94.6% of cases, postoperative complications persisted in 5.4% of cases ( $p=0.007$ , statistically significant). Complication analysis revealed that one case of persistent mild hypoesthesia and one case demonstrating chronic fistulation with inflammatory exudate

*Results after 3 months of surgery*



**Chart 3.4.** *Surgical results after 3 months*

**Comments:** Three-month postoperative evaluation shows good outcomes accounts 94.6% of cases, satisfactory outcomes: 5.4% of cases and no poor outcomes observed. The satisfactory outcomes group comprised two cases demonstrating residual transient hypoesthesia and persistent low-grade inflammatory drainage.

## DISCUSSION

### Early Postoperative Outcomes (7-Day Follow-up)

The 7-day postoperative results demonstrated a high success rate, with 78.4% of cases showing no complications, significantly higher than the 21.6% complication rate ( $p = 0.013$ ). The complications included persistent swelling (62.5% of complicated cases), neurosensory disturbances (25%), and mucosal flap dehiscence with purulent discharge (12.5%). Our findings are slightly different with the study of Malas et al. (2024), who reported a 37% complication rate in dentigerous cyst enucleation and the most common complications were postoperative infections [6].

### Long-Term Outcomes (3-Month Follow-up)

At 3 months, 94.6% of cases achieved complication-free healing, with only 5.4% exhibiting minor complications (persistent hypoesthesia and low-grade inflammatory

drainage). No recurrences were observed radiographically. The absence of recurrence is lower than the results of a retrospective study of Morgan et al, who found 2.5% (1/40 cases) recurrence in adequately enucleated cysts [7].

### Clinical implications

Early complications (swelling, hypoesthesia) are transient and manageable, supporting conservative monitoring in uncomplicated cases. Moreover, the infection risk (2.7%) remains a concern, particularly in preoperatively infected cysts, necessitating preoperative antibiotic prophylaxis in high-risk cases. In addition, long-term hypoesthesia suggests cautious nerve handling in mandibular cysts, possibly avoiding electrocautery near the inferior alveolar canal.

## CONCLUSIONS

The results shows that The Partsch II procedure (primary enucleation) is an

optimal treatment approach for dentigerous cysts, because it has high therapeutic efficacy with minimal recurrence rates. Moreover, it produces significant advantages over staged procedures as it is not only single-intervention resolution, reducing overall treatment duration but also decreasing healthcare utilization costs.

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