



Surgical management of intraoral ranulas in children: An analysis of 17 pediatric cases

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ABSTRACT

Objective: The preferred treatment of pediatric intraoral ranulas remains controversial. We present our experience with ranulas at the Gyeongsang National University Hospital and review the literature.

Methods: The study involved 17 children under 15 years of age who visited our hospital from 2001 to 2008 and were diagnosed with a ranula exceeding 2 cm in diameter. The age and gender of the patients, the surgical procedures, presurgical observation period, postsurgical follow-up period, and complications of each case were determined. The unruptured specimens were all subjected to detailed pathological analysis.

Results: The patients were on average 9.3 years and there were 10 girls and 7 boys. Spontaneous resolution was not detected in any of the cases during the presurgical observation period. Indeed, in two cases, the ranula had increased in size. The ranula and sublingual gland (SG) were resected in all cases. The average operation time was 1 h. Recurrence and complications were not detected in any of the cases. Pathological analyses revealed that there was no communication of the ranula with the SG in any of the cases.

Conclusions: Our experiences suggest that the presurgical observation period need not be longer than 3 months and that the resection of ranulas along with the ipsilateral SG is a safe and effective primary treatment for symptomatic pediatric intraoral ranulas that exceed 2 cm in diameter.

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1. Introduction

While ranulas occur predominantly in the lower lip, they can also occur in any area of the oral cavity that is in the vicinity of a minor salivary gland [1,2]. They can be divided into simple and plunging ranulas. Simple ranulas are either mucus retention cysts that are restricted to the oral cavity floor or mucus extravasation pseudocysts, whereas plunging ranulas are mucus extravasation pseudocysts that originate from the sublingual gland and involve the spread of the lesion to the neck area through the mylohyoid muscles [2,3]. Ranulas can be treated by various methods, but the most appropriate treatment protocols have not yet been established, particularly for pediatric cases [2,4]. Indeed, most of the recent studies on ranulas are based on adults and involve non-surgical therapies [5–7], and there are only a few studies that have examined the outcomes of surgically treated children with ranulas [8–10]. To improve this situation, we studied the simple ranula

pediatric patients who visited the Gyeongsang National University Hospital between 2001 and 2008. In particular, we examined the outcome of the presurgical observation period, namely whether the ranula changed during this period and whether longer presurgical observation periods were useful. We also examined the surgical techniques that were used and their outcomes, in particular whether there were recurrences or complications. We also assessed whether complications emerged during the postsurgical follow-up period.

2. Methods

We examined all cases of pediatric patients who were younger than 15 years of age and had been diagnosed with a simple ranula in the Department of Otolaryngology of the Gyeongsang National University Hospital between January 2001 and December 2008. We selected all those patients with symptomatic ranulas that exceeded 2 cm in diameter who were observed for at least 3 months before being treated surgically. Pediatric patients with a history of ranular surgery and children whose presurgical observation period was shorter than 3 months were excluded

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from this study. In total, 17 pediatric patients satisfied the inclusion and exclusion criteria. In all cases, the resected tissues were subjected to histopathology by the same pathologist, who examined whether the sublingual gland was connected to the ranula.

3. Results

In total, 17 pediatric patients were diagnosed with symptomatic ranulas that exceeded 2 cm in diameter. These patients ranged in age from 6 to 13 years (mean age, 9.1 years) and there were 10 girls (59%) and 7 boys (41%). With regard to the location, the ranula was on the left and right side in 6 and 11 patients, respectively. The ranulas ranged in size from 2 to 4 cm in diameter (mean diameter, 2.59 cm). The presurgical observation period ranged from 3 to 14 months (average, 6 months). During this period, the ranula was observed to increase in two cases, and in one case dilation of Wharton's duct and submandibular gland swelling caused by the compression of the orifice of Wharton's duct was detected. Spontaneous resolution of the lesion was not detected in any of the cases. With regard to the surgical procedures that were employed, the ranula and the ipsilateral sublingual gland were resected in all cases (Fig. 1). The operation time ranged from 44 to 80 min (mean, 60 min). With regard to complications that developed during surgery, the ranula ruptured in three cases. However, neurological injuries or hematomas were

never observed. The postsurgical follow-up period ranged from 6 to 16 months (mean, 9 months). During the postsurgical follow-up period, recurrence was not detected in any of the cases. In addition, limitations of tongue movement due to the scar were not observed (Table 1). The same pathologist analyzed all the ranulas except for the three that had ruptured during surgery and found that a direct communication between the ranula and the sublingual gland could not be detected (Fig. 2).

4. Discussion

The protocols of ranula treatment have not evolved much in recent times because ranulas occur much less frequently than salivary stones. We performed a MEDLINE review of the English-language literature to locate all of the reports that have examined the outcomes of the surgical treatment of pediatric intraoral ranulas. We identified three reports [8–10] involving 6, 16, and 9 children with intraoral ranula who were diagnosed at various facilities, respectively. The greatest number of cases for a single center was 16. Our single center study population encompassed 17 patients. The details of the three papers are presented in Table 2 along with the details of our study. In total, there were 48 children. Of these, 14 and 28 were boys and girls, respectively, and the gender of the remaining six cases was not specified. While it seems that ranulas occur more commonly in girls, the reason for this is unclear and warrants further investigation. The patients ranged in age from 17 days to 17 years. Two (4.1%), 13 (27.1%), and 33 (68.8%) of the patients were treated by observation alone (the ranula resolved spontaneously), marsupialization, and resection of the ranula along with the sublingual gland, respectively. The most commonly occurring complication was the rupture of the ranula during surgery. There were two recurrences, one in a patient treated by marsupialization and one in a patient treated by resection of the ranula with the sublingual gland.

There are numerous non-surgical and surgical methods that have been used to treat pediatric ranulas and it remains unclear what is the most appropriate treatment procedure. The surgical options include resection of the ranula alone or together with the ipsilateral sublingual gland resection, and marsupialization. It has been reported that marsupialization and ranula resection alone are associated with a high rate of recurrence [2,4,11]. In contrast, the recurrence rates after resection of the ranula along with the ipsilateral sublingual gland are minimal [2,4,12], but

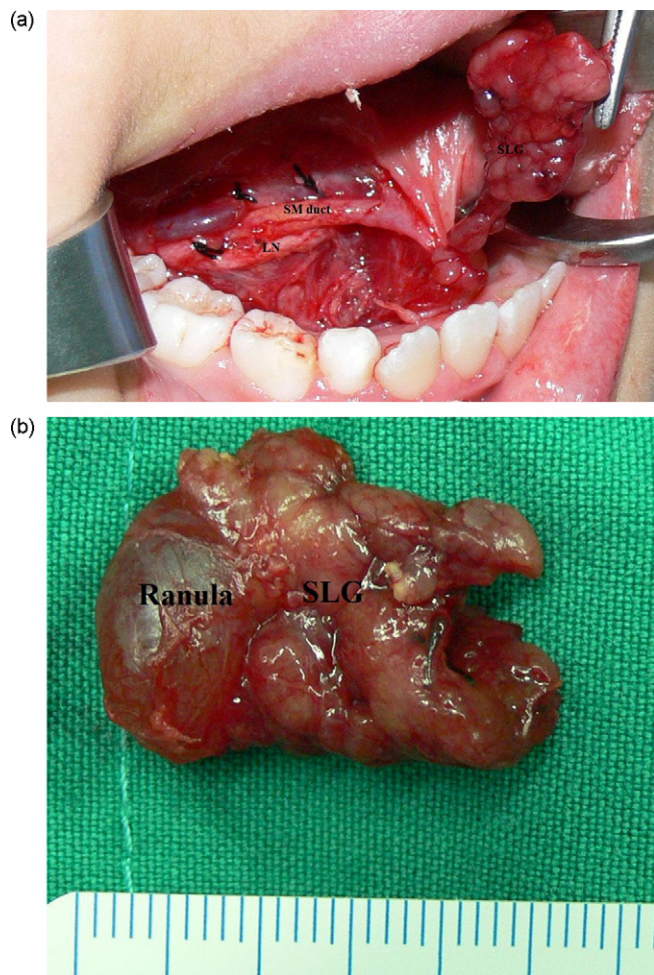


Fig. 1. (A) Intraoral view illustrating the resection of a ranula with the submandibular gland. (B) The resected ranula with the attached sublingual gland (SLG, sublingual gland; LN, lingual nerve; SM duct, submandibular duct).



Fig. 2. Histopathology of the resected ranula and sublingual gland shows no communication between the ranula and the sublingual gland. The thin arrows show the capsule while the open arrow shows the duct. SL, sublingual gland (H&E stain, X12).

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