

Clinical Observation of Fenestrated Decompression in the Treatment of Odontogenic Jaw Cyst

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Abstract: Cystic lesions of the jaws are a common disease in oral and maxillofacial surgery. Due to the hidden location of the disease and no clinical symptoms in the early stage, the lesions often involve a large area when the patients go to the clinic, and the degree of bone destruction is already quite serious. Using traditional surgical methods has great trauma, many complications, and will reduce the masticatory function and affect the face. To study the effect of fenestration decompression on the treatment of odontogenic jaw cysts. Thirty-two cases of large odontogenic jaw cysts were treated by fenestration decompression and cyst curettage. Those who underwent fenestration decompression underwent panoramic radiographs every 3 months after operation, and compared with the preoperative panoramic radiographs. If the cyst disappears completely, stage II surgery is not required, otherwise, the purpose of curing the cyst is achieved by curettage of the shrunk cyst through stage II surgery. In recent years, the proposed fenestration decompression surgery has been increasingly favored by maxillofacial surgeons due to its simple operation method, less trauma, significantly reducing the scope of lesions, restoring the shape of the jaw, and protecting the shape and function of the jaw to the greatest extent. It has been widely concerned and gradually promoted and applied in clinical practice.

1. Introduction

Jaw cyst is a common disease in oral and maxillofacial surgery. There are usually no obvious clinical symptoms in the early stage. Therefore, patients usually have a large cyst cavity and serious damage to the jaw, and are often accompanied by tooth loosening and displacement in the affected area and occlusal relationship. Disorders, maxillofacial deformities, and secondary infections [1]. Due to the hidden location of the disease and the absence of any symptoms in the early stage, patients are not easily aware of it. When most of the patients seek medical attention due to facial deformities, the lesions often involve a large area, their jaws have been significantly bulged, and the degree of bone destruction has been quite serious [2]. For such patients, segmental or one-sided jaw resection was often used clinically in the past. However, this operation has large trauma and many complications, which will reduce the masticatory function and affect the facial appearance, which is difficult for most patients to accept [3]. Due to the slow development of odontogenic jaw cysts, strong concealment, no obvious symptoms in the early stage, and poor patient consciousness, once the disease persists and the cyst volume increases, it is easy to cause jaw bulge, tooth damage, and

maxillofacial deformity. Clinical symptoms such as oral numbness and decreased masticatory function have serious adverse effects on the quality of life of patients. Because the early symptoms are not obvious, so that patients can not be treated in time [4]. When the patient is treated, the cystic cavity has become larger, and the jawbone has been severely damaged. At the diseased site, there are often occurrences of maxillofacial deformity, occlusal relationship disorder, tooth loosening and displacement, and secondary infection [5]. Especially for adolescent patients in the growth and development period, postoperative facial asymmetry becomes more and more obvious with age, which will cause permanent psychological trauma [6]. Therefore, in the treatment of patients with large odontogenic cystic lesions of the jaw, the shape and function of the jaw should be preserved to the maximum extent while ensuring the curative effect [7].

2. Materials and Methods

2.1 General Information

A total of 50 patients with odontogenic jaw cysts who were treated in our department from July 2016 to May 2017 in a hospital were selected. Among them, there were 28 males and 22 females, ranging in age from 11 to 71 years old, with an average of (36.1 ± 3.3) years old [8]. All cysts were confirmed by X-ray and postoperative pathology. There were 12 cases of dentate cysts, 12 cases of root end cysts, and 8 cases of keratinizing cysts. From August 2007 to February 2009, there were 27 patients, 12 males, who were diagnosed as large odontogenic cystic lesions of the jaw after clinical and X-ray examination in the Maxillofacial Surgery Department of another hospital and who had not received any treatment before. , 15 females, the youngest was 14 years old, the oldest was 45 years old, and the average age was 24.6 years old [9]. The patients and their close relatives were clearly aware of the content and purpose of this study, voluntarily participated in this study and signed the informed consent, and the formulation of this study protocol complied with the relevant requirements of the World Medical Association Declaration of Helsinki. Thirty-two patients with jaw cysts who were treated in the Department of Stomatology of Another Hospital from March 2004 to March 2010 were selected, including 19 males and 13 females, ranging in age from 13 to 52 years old, with an average age of 38 years [10]. X-ray and postoperative pathology of all patients showed that there were 15 patients with keratinizing cysts, 16 patients with root cysts, and 19 patients with dental cysts. After surgery, all patients were reviewed and followed up for 1 to 2 years. A total of 90 patients with odontogenic jaw cyst who were treated and treated in the First People's Hospital of Pinghu City from May 2015 to May 2017 were selected as the research subjects, and the subjects were divided into the study group (45 cases) according to the random number table method.) and the control group (45 cases).

All cysts were confirmed by X-ray and postoperative pathology, including 12 cases of dentate cysts, 12 cases of root end cysts, and 8 cases of keratinizing cysts [11]. The indication for surgery is jawbone cyst without acute infection; surgery is postponed for patients with acute infection. After the treatment, 32 patients were regularly reviewed and followed up for 2 to 3 years, with an average of about 2.5 years. Among them, 2 cases were mostly in the upper and lower jaws, 1 case was single in the maxilla, and 24 cases were in the mandible [12]. The main clinical manifestations: All patients had obvious facial swelling and bulging caused asymmetric deformity, 21 cases had obvious buccal bulge, 6 cases had obvious buccal and lingual bulge, and felt different degrees of ping pong ball-like feeling at the bulge, and the puncture and extraction were light. Yellow or grass-green cyst fluid, of which 13 cases showed a white sebum-like substance in the cyst fluid.

2.2 Methods

All patients underwent routine preoperative examinations, taking full-maxillary surface slices, and some patients underwent CT scans as needed to clarify the extent of cystic lesions. Clean your mouth and prepare for surgery. The patients in the control group underwent routine jaw cyst removal. After the location of the cyst and the surrounding tissue structure were determined by X-ray or CT scan, and local anesthesia was performed with nerve block, the supernumerary cysts were removed by flap, bone chisel and curettage. Teeth, impacted teeth, deformed teeth and other lesions and unreserved teeth, cyst tissue and contents are thoroughly removed, and oral cleaning is performed, drainage is performed, and the wound is sutured. Fill the iodoform gauze to the opening window, suture and fix it. Undercutting is prohibited for the relevant teeth in the surgical area. After 7 days of follow-up, the iodoform gauze was taken out and rinsed with normal saline. After 10 days, the iodoform gauze was replaced and the iodoform gauze was removed. The cystic cavity opening window was trimmed to the same size as the bone window, and the oral mucosa at the opening was sutured to the cyst wall tissue, leaving a long thread. Pack the iodoform gauze at the opening, and suture the iodoform gauze clumps. During the operation, the teeth involved in the surgical area were not undercut.

All cases were performed under local anesthesia, using an intraoral incision, and the fenestration site was selected at the weakest part of the cyst wall, especially the part with a ping-pong ball-like feeling. Have the patient flush the cyst with saline after meals and at bedtime. Then, follow-up visits are made every 3 months. If the cyst disappears completely, there is no need for a second-stage operation. Otherwise, a second-stage operation will be performed at the latest about a year after the operation to scrape off the residual cyst. The patients in the study group underwent fenestration decompression. After the location of the cyst and the surrounding tissue structure were determined by X-ray or CT scan, and local anesthesia was performed for nerve block, the buccal labial and buccal cavity with the most bulging oral vestibular cyst or the closest to the cyst was selected. At the protruding position of the groove, a 2 cm × 1.5 cm incision was made, the gingival mucoperiosteal flap was opened to expose the jaw cortex, the superficial bone was removed by the implanter, the periosteum was stripped, and the exposed thin bone fragment was removed with an osteotome or rongeur to expose the The cyst wall is formed, the cyst wall is fenestrated, the cyst wall is preserved, and the lesions and deformed teeth are extracted. After 1 week, the patient was followed up. The iodoform gauze was removed and then washed with normal saline. The window was opened to place the iodoform gauze to prevent the entry of foreign objects. The iodoform gauze was replaced after 10 days of follow-up.

3. Results and Discussion

3.1 Results

Among the subjects of this study, there were no patients with recurrent infections. For 31 patients treated with fenestration decompression, the observation at 4 months after the operation showed that the bony bulge area was reduced, and the X-ray showed that the cyst cavity became smaller. , The jaw is in good shape, the alveolar ridge is normal, and no nerve damage occurs. The comparison of the basic data of patients with odontogenic jaw cysts is shown in Table 1.

Table 1 Comparison of Basic Data of Patients with Odontogenic Jaw Cyst

Group	Cyst diameter	Cyst location	
		Maxillary cyst	Mandibular cyst
Control group	5.66+0.21	28	22
Research group	5.37+0.19	17	25
Measurement data	0.024	0.734	
Count data	0.351	0.347	

1 month after fenestration decompression, the patient's facial swelling began to subside; 3 months after surgery, the patient's facial swelling subsided significantly, and the swelling of the intraoral gingival buccal sulcus and retromolar area was significantly reduced; 4 to 6 months after surgery, the patient's facial swelling Both sides were basically symmetrical, the jaw bone was in good shape, and the original palpable ping-pong ball-like feeling disappeared. No serious infection and long-term repeated infection occurred in one case after operation. There was no significant difference in operation time and intraoperative blood loss between the two groups ($t=1.259$, $P=0.137$), while the intraoperative blood loss in the study group was significantly less than that in the control group, and the difference was statistically significant ($t=1.259$, $P=0.137$). $t=11.457$, $P<0.001$). No long-term recurrent infection occurred in any of the cases. In 27 cases, 3 to 6 months after the operation, it was observed that the bulging part of the jaw began to shrink, and the cystic cavity became smaller on X-ray. The operative time and intraoperative blood loss of patients with odontogenic jaw cysts are shown in Table 2.

Table 2 Comparison of Operative Time and Intraoperative Blood Loss in Patients with Odontogenic Jaw Cyst

Group	Number of cases	Operation time	Intraoperative blood loss
Control group	37	50+9.23	124.56+16.69
Research group	37	54.19+6.57	87.32+18.93
Measurement data		1.326	10.379
Count data		0.134	0.657

Trabecular bone formation can be seen; about 1 year after operation, X-ray shows that the cyst tends to disappear, the X-ray bone density of the lesion area increases, which tends to be consistent with the adjacent normal bone area, the fenestration fistula is closed, and the facial swelling is all Back to normal. 1 month after fenestration decompression, a small amount of reparative new bone formation around the cyst wall can be observed on the curved slices, and the lesion scope is limited; 3 months after surgery, the lesion scope is significantly reduced, and the surrounding cyst wall and cyst cavity are significantly reduced. Active new bone repair images can be seen inside; 4 to 6 months after the operation, the area of the cyst shrunk significantly and gradually receded toward the opening. If the lesion is located in the mandible, the displaced mandibular neural canal can be seen to return to its normal position, and the mandibular angle and the cortical image of the posterior border of the ascending mandibular ramus was basically normal.

3.2 Discussion

Odontogenic cystic lesions of the jaw are common clinical diseases in oral and maxillofacial surgery, including odontogenic cysts, odontogenic keratocysts, and monocystic ameloblastoma, which are more common in young adults and can occur in the jaw.any part of the bone. Due to its slow growth, hidden onset site, and early lesions often develop along the long axis of the jaw, there are often no symptoms in the early stage, and it is difficult to attract patients' attention. Oral and maxillofacial cysts are a common benign oral disease, and odontogenic maxillofacial cysts are the

main type of oral and maxillofacial cysts. The clinical manifestations are cysts in the epithelium or residual epithelium of tooth-forming organs. Fenestration and drainage can destroy the living conditions of the cyst, eliminate the pressure in the cyst, shrink the fibrous connective tissue of the cyst wall, and cause the cyst cavity to gradually shrink, thereby gradually restoring the shape of the jawbone and helping the adjacent bone to repair itself, thereby promoting the cyst to slowly Shrink until it disappears. Among them, 5 cases had increased X-ray bone density at the edge of the lesion at 3 to 6 months after operation, indicating that the cyst cavity became smaller; after 12 months of washing and observation, the X-ray bone density of the edge area increased close to the normal bone density, and the X-ray of the central area was close to normal. There was no significant change in linear bone density compared with that before treatment, but the volume had shrunk to about 20% of the original cyst volume, the fistula was not reduced, and there was still a small amount of cystic secretions during flushing; 15 months after the operation, these 5 cases underwent stage II cysts again Curettage. When found to seek medical treatment, the degree of bone damage has been quite serious, often resulting in obvious bulging of the jawbone, tooth displacement, occlusal disorder, and facial deformity. Surgery is usually used in clinical treatment of odontogenic cystic lesions of the jaw. For small jaw cysts, enucleation can be performed to completely remove the lesions; however, for larger jaw cysts, keratinizing cysts that are prone to recurrence, and enamel cysts Cell tumors are more difficult to treat.

According to the pathogenic factors, odontogenic jaw cysts can be generally divided into two categories: developmental and inflammatory. The former is caused by some abnormalities in the process of tooth development and eruption, and the latter is related to the inflammatory foci in the jaw related. The advantages of fenestration decompression are mainly reflected in that it effectively protects the tissues and structures around the cyst. The operation method is relatively simple, the trauma is relatively small, and there will be no scars on the patient's face after the operation, and it will not affect the operation. The patient's chewing function. For monocystic and polycystic larger odontogenic jaw cysts, the teeth and jaws need to be preserved, and fenestration decompression should be the first choice. fenestration decompression protects the important structures around the cyst to the greatest extent, not only preserves the integrity of the dentition, but also has a simple surgical method, which is easy for the operator to grasp, with mild trauma, no scars left on the face, less pain, and less masticatory function impact, so it can be accepted by most patients.

4. Conclusions

In conclusion, fenestration decompression for the treatment of odontogenic jaw cysts is a safe and effective method, which has little damage to the patient and can maintain the function and shape of the jaw be promoted in clinical application. For patients with large cysts, surgery is the only effective treatment. For cysts with a diameter of <1 cm, dental treatment can be performed first. If the patient cannot reduce the swelling, surgery is still required. fenestration decompression, also known as pouching, is to open a window on the surface of the cystic lesion, partially open the bone and cyst wall, drain the cystic fluid, and make a plug device to keep the drainage opening unobstructed, so that the pressure inside and outside the cystic cavity can be increased maintain balance. At the same time, under the functional activity of the jaw, the peripheral bone of the cyst was regenerated, the shape of the jaw was remodeled, the cyst cavity was gradually reduced, and the shape was restored. Usually, the decompression time after fenestration is 3 to 18 months. If the cyst disappears after decompression, stage II surgery is not required, otherwise, stage II surgery can be performed to cure the reduced cyst.

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