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## Treatment of post-traumatic parotid gland fistula in children

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## ABSTRACT

Post-traumatic fistula of the parotid gland is rare especially in children and the treatment is not established: surgery, drugs or conservative treatment. The authors present the case of a 3-year-old child with cutaneous-parotid fistula following penetrating trauma of the face. A conservative treatment with compression dressings was used and one month later a complete closure of the fistula was obtained. In this case a conservative approach should be considered because the part of the fistulized gland goes into atrophy and allows the closure of the fistula.

## 1. Introduction

The parotid gland is encapsulated in its fascia and its anatomical location makes it less vulnerable to facial trauma, so its injury is rare [1]. The parotid gland can only be injured by a penetrating wound, or by a violent external force with fracture of the mandible [2]. The consequences of its involvement in the trauma are: haemorrhage, infection, facial nerve lesions, sialoceles and salivary fistula. Treatment can be surgical or conservative and varies according to the type of wound, site, complication, patient age and time after the trauma [3]. We report the case of a penetrating trauma of the face with subsequent parotid fistula treated in a conservative way.

## 2. Case report

We report the case of a 3-year-old boy accompanied to the emergency room for multiple injuries to the left face from accidental fall on a glass jar, the wounds were explored for foreign bodies, sutured and the patient sent home with therapy: antibiotic. One week later, the boy had serous secretion from the wound in the left mandibular region with inflamed periwound skin, therefore it was recommended to continue the antibiotic therapy. About 20 days after the accident, because of the persistence of the serous secretion, the child came to our Pediatric Surgery Unit.

On physical examination, wounds were healing in the left half-face, while the wound in the left parotid region showed red and swollen skin with abundant clear secretion. For the suspicion of a lesion of the parotid gland, the patient underwent an ultrasound examination which showed ductal lesions and lacerations of the parotid capsule, furthermore the glandular tissue was enlarged with an irregular parenchyma and presence of cystic formation that from the gland entered the subcutaneous tissue and reached the skin (Fig. 1). Anamnestic examination showed a greater secretion in concomitance with solid meals compared to liquid meals (Fig. 2). A diagnosis of post-traumatic cutaneous-parotid fistula was made and a conservative treatment was started: antibiotics and compressive dressing which was replaced several times a day due to saliva leaking. Over the weeks, the secretion gradually decreased to complete resolution after 4 weeks.

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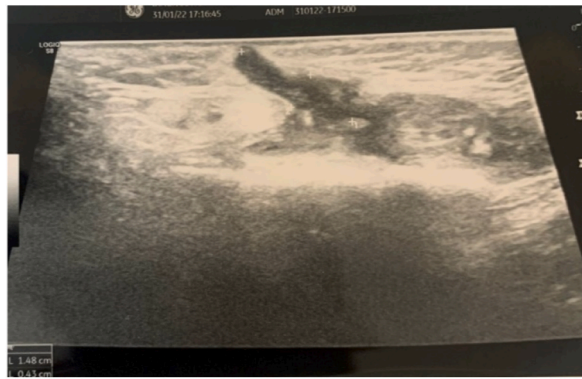


Fig. 1. Ultrasound image: pseudo cystic image from the gland to the skin, alteration of the glandular parenchyma.



Fig. 2. Seat of trauma with clear secretion: line from tragus to midline of the upper lip (red line) and anatomic position of the parotid gland (green line). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

At 2-month follow-up the patient was healthy, without problems during meals and the ultrasound showed the parotid gland capsule intact, without fistula (Fig. 3).

### 3. Discussion

Trauma to the parotid gland is rare in adults and much more in children. The responsible mechanism of action is particular because the trauma must be penetrating like a knife, a sharp object or a lesion of bone [4,5]. The deep part of the gland is better protected, which is why lesions occur more often on the superficial part of the gland. The natural evolution of the trauma leads to a partial or total atrophy of the affected glandular region and a compensatory hypertrophy of the residual part, so as to guarantee normal functions [6]. For the diagnosis of glandular lesion, anamnestic data, such as site of the penetrating trauma, fluid secretion and pain during meals, are of great importance. In the event that a penetrating wound occurs along a line between the tragus of the ear and the midline of the upper lip (Fig. 2), the risk of injury to the parotid gland or parotid duct is high [1,3]. It is important to note that the lesion of the gland can be undiagnosed even with a careful clinical examination carried out immediately after the trauma, as happened in our case. The cutaneous-parotid fistula is one of the possible complications of the penetrating trauma of the face, it is a way from the gland to the skin that discharges saliva. It is a rare occurrence in the adult, of exceptional finding in the child, in fact in this age the congenital ones or those after parotid surgery are reported [7].

These salivary fistulas usually present a week after the injury, in fact they can develop after wound healing in the event of a capsule and duct injury. In doubtful cases, an easy diagnostic test is the level of salivary amylase in the fluid leaking from the wound. Ul-



Fig. 3. Image of the patient at 2-month follow up: scar without fluid secretion.

trasound and, in selected cases, magnetic resonance imaging have also been helpful in confirming the diagnosis [8]. Regarding the treatment, there is no agreement, in fact different types of treatment have been reported in relation to the onset, the age of the patient and the type of the injury [9]. If possible, treatment of a parotid lesion should be immediate, otherwise, the salivary fistula can, at the first evaluation, be managed nonsurgical with antibiotics, compression bandages and continuous aspiration. If there is no response, it is possible to continue with further treatments: anti-sialagogues, parental nutrition, injections of botulinum toxin, radiotherapy [10]. In cases where these procedures also fail, surgical therapy is indicated; even in this eventuality, with progressively more complex interventions: first the repair of the parotid duct, then the superficial or total parotidectomy and parasympathetic denervation can be considered [10,11].

In our case, the fistula was diagnosed three weeks later. We used conservative treatment with antibiotics to avoid further complications and continuous compression dressing of the site without other drugs. We continued this treatment as we observed a reduction in fluid secretions and one month later we had the total absence of secretions and wound healing. Follow up showed wound and gland repair. Probably the part affected by the fistula had involuted and no longer producing secretions has allowed the reconstruction of the capsule. Penetrating trauma to the parotid region must always lead to suspicion of a lesion of the gland; early diagnosis and therefore immediate treatment avoid complications and prolonged treatments for young patients. In the pediatric population, although the literature and our experience are limited, conservative treatment appears to be easily feasible and with good results in cases of parotid fistula onset.

#### 4. Consent to publish the case report was obtained

This report does not contain any personal information that could lead to the identification of the patient.

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All authors attest that they meet the current ICMJE criteria for Authorship.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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