



Traumatic herniation of the buccal fat pad

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Abstract

Two new cases of traumatic herniation of the buccal fat pad are presented. The herniated fat pad was repositioned in case 1 and was excised in case 2. There was no recurrence after surgery in each case. Reviewing the literature, the lesion usually occurred in infants or young children under the age of 4 years as a result of traumatic penetration of the buccal mucosa and buccinator muscle with a foreign object. (*Pediatr Dent* 23:249-252, 2001)

The buccal fat pad consists of a central body and four extensions: buccal, pterygoid, superficial, and deep temporal. The buccal extension locates superficially within the cheek, and the pterygoid and temporal extensions are more deeply situated. The buccal extension is encapsulated by a parotidomasseteric fascia and enters the cheek below the parotid duct. It extends along the anterior border of the masseter and descends into the mandibular retromolar region.¹

The buccal fat pad is relatively large in infants and has been referred to as the suckling pad;² therefore, a minor tear of the buccinator muscle can allow a herniation into the oral cavity. Until 2000, only 31 cases of traumatic herniation of the buc-

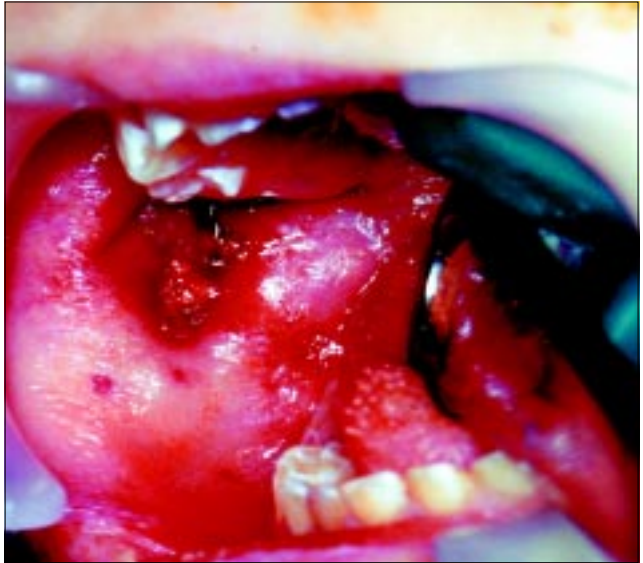


Fig 2. The mass was excised and the stump of the fat pad was seen in the mucosal defect.



Fig 1. Clinical appearance showing the herniated fat pad from the right buccal mucosa.

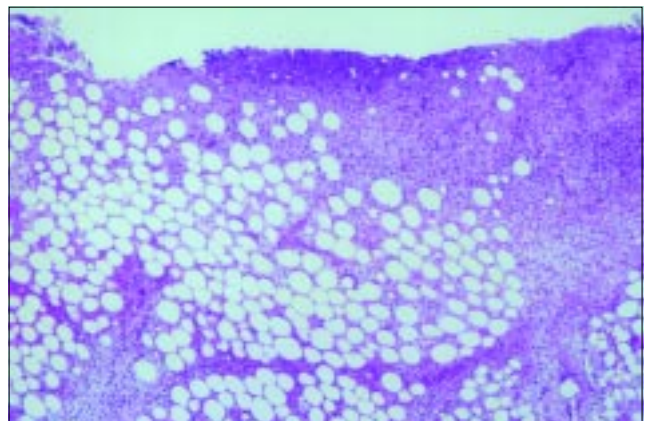


Fig 3. Photomicrograph showing the mass composed of mature adipose tissue with inflammatory cell infiltration and necrotic material at the surface (H&E, original magnification x40).

Table 1. Clinical Findings of Reported Cases

Author(s)	Year	Age	Sex	Size (cm)	Instrument caused the lesion	Treatment
Clawson et al.	1968	2yr	F	NS	Broom handle	Tissue replaced
Brooke & MacGregor	1969	2yr 4mo	M	2.5	Knocked face against chair	Excision
Browne	1970	10mo	M	2.5	Model antelope horn	Tissue replaced
Cavina	1972	5mo	M	1.5 × 1.0	Spoon	Excision
Messenger & Cloyd	1977	4yr	M	2.0 × 1.0	Struck face on toy	Excision
Kawahara et al.	1979	1yr 6mo	F	2.0 × 1.2 × 0.7	Toothbrush	Excision
Ogawa et al.	1979	1yr 2mo	M	Tip of thumb	Toothbrush	Tissue replaced
Mishina et al.	1979	2yr 6mo	F	2.0 × 1.0 × 1.0	Toothbrush	Excision
Wolford et al.	1981	8mo	F	2.0 × 1.0 × 2.25	Sharp toy	Excision
Ogawa et al.	1981	1yr 10mo	F	Tip of thumb	Toothbrush	Tissue replaced
Tanaka et al.	1982	3yr 11mo	F	3.0 × 1.5 × 1.5	Toothbrush	Tissue replaced
Iizuka et al.	1983	1yr 11mo	M	3.0 × 3.0 × 1.0	Toothbrush	Excision
Judah & Bach	1984	4mo	M	NS	Struck face on floor	Excision
Koga et al.	1984	1yr 4mo	M	1.0	Toothbrush	Excision
Fleming	1985	10mo	M	3.0 × 2.0 × 1.0	Edge of fireguard	Excision
	1985	12yr	M	NS	Struck with fist	Tissue replaced
Peacock & Kessel	1985	10mo	M	2.5 × 1.0 × 1.0	Lead pencil	Excision
Kellner	1987	18mo	F	2.0	Comb	Excision
Baba et al.	1987	4yr 3mo	M	Tip of thumb	Toothbrush	Tissue replaced
Ohishi et al.	1989	8mo	F	2.0 × 1.5 × 1.5	Spoon	Tissue replaced
	1989	2yr	M	2.4 × 1.5 × 1.0	Toothbrush	Excision
Nakamura et al.	1990	1yr 1mo	F	Tip of little finger	Food (dried fish?)	Excision
Haria et al.	1991	4yr	M	3.5 × 1.2 × 1.0	Struck face on handle of bicycle	Excision
Horiuchiet al.	1992	2yr 7mo	F	3.0 × 1.5 × 0.5	Toothbrush	Excision
Shimizu & Yokobayashi	1993	4yr	M	1.5 × 1.5 × 1.0	Toothbrush	Excision
	1993	3yr	F	1.7 × 1.1 × 1.1	Toothbrush	Excision
Uchigamibori et al.	1994	4yr 4mo	M	3.5 × 2.5 × 2.0	Toothbrush	Tissue replaced
Takenoshita et al.	1995	1yr 8mo	F	2.5 × 1.5 × 1.0	Toothbrush	Excision
Zipfel et al	1996	9mo	F	2.0 × 1.5	Hairbrush	Excision
	1996	1yr 9mo	M	3.0 × 1.5	Struck face on table	Excision
Muroki et al.	1996	3yr 5mo	M	2.5 × 1.5 × 1.0	Toothbrush	Excision
Horie et al.	2000	10mo	M	1.0 × 0.5 × 0.5	Chopstick	Tissue replaced
	2000	1yr 9mo	F	1.5 × 1.0 × 1.0	Toothbrush	Excision

NS: Not stated.

cal fat pad have been reported (Table 1).³⁻¹⁹ In this article two additional cases of this rare condition are presented along with a review of the literature.

Case report

Case 1

A 10-month-old male infant was referred to evaluate an oral mass. He had fallen while holding chopsticks in his mouth 4 hours previously. At the time of injury there was slight bleeding and the chopsticks did not break, but the patient exhibited a mass projecting from the right buccal mucosa. On examination, laceration was found on his right buccal mucosa, inferior and distal to the parotid papilla. From the laceration, reddish-

yellow, soft pedunculated mass measuring 1.0 x 0.5 x 0.5 cm was protruding.

The remainder of the examination was unremarkable. Clinical diagnosis was herniation of the buccal fat pad. As the mass was small and the inflammatory change was minimal, it was decided to replace the mass.

On that day, under local anesthesia, the herniated tissue was rinsed adequately to clean the margins and repositioned using dental tweezers. The mass was held in place until the mucosal surface was closed primarily with 4-0 nylon sutures. The child was given an antibiotic coverage for succeeding four days. The recovery was uneventful. Two weeks after surgery the wound was satisfactory healed.

Case 2

A 1-year, 9-month-old girl visited our clinic for further evaluation of oral mass. She had fallen with her toothbrush in her mouth previous night, about 12 hours before arrived. Her mother found a wound in the right buccal mucosa with a little bleeding. There was nothing protruded in the buccal mucosa. As the toothbrush was intact and did not snap in the mouth and the bleeding ceased soon, she was left untreated.

The following morning a large mass extending from the right buccal mucosa was noted by her mother. Oral examination showed a reddish-brown, soft pedunculated mass which measured 1.5 x 1.0 x 1.0 cm. It projected from the right buccal mucosa inferior to the parotid papilla (Fig 1). The clinical diagnosis was herniation of the buccal the fat pad.

The child was admitted to the hospital and three days after the initial injury the protruded mass was excised under general anesthesia. The base of the mass was deeply attached to the buccal fat pad but easily excised with minimal bleeding (Fig 2). The wound was ligatured primarily with 4-0 nylon sutures. An antibiotic cover was given for five succeeding days. She was discharged from the hospital on the third day after the operation.

The postoperative course was uneventful and there was no cosmetic deformity after a one-month followup examination. The excised mass was yellow and homogeneous. The microscopic findings include well-circumscribed lobules of mature fat cells that are separated by thin fibrous septa and covered by an ulcerated mucosal surface (Fig 3). In parts, chronic inflammatory cell infiltration was seen.

Discussion

Almost all cases of herniation of the buccal fat pad occur after a fall with a foreign object, causing trauma to the mouth. They have been described as traumatic herniation of buccal fat pad or traumatic pseudolipoma.²⁰ There have been some reports that have been caused in conjunction with neoplasm or vascular anomaly.²¹⁻²³

Herniation of the buccal fat pad means *intraoral* herniation of the buccal fat pad. On the other hand, in case of the *outward* prolapse of the lower portions of buccal fat pad, resulting in facial mass, it has been mentioned as pseudoherniation of the buccal fat pad, or "chipmunk cheek."²² It has been caused mainly by surgical trauma (eg, facial plasty or liposuction) and has been reported in the plastic surgery literature.²

Traumatic herniation of the buccal fat pad occurs more frequently in infants and young children.²⁰ All reported cases occurred in children under 4 years of age, except for one 12-year-old case.³⁻¹⁹ Clinically, during a short period of time after the initial accident, a pedunculated mass was found protruding from the buccal mucosa. Facial edema was usually absent or mild. Typically, oral laceration was minimal and bleeding was less prominent. It is interesting to note that almost all the cases occurred at the occlusal level, near the parotid papilla.^{4-7,10-19} No patient had any associated clinical abnormalities, except for one case of respiratory embarrassment caused by the increase in size.¹⁰

Histologically this lesion is not capsulated and is composed of mature adipose tissue with a varying degree of inflammatory cell infiltration. Necrotic change with bacterial proliferation may be seen on the surface.^{7,14,18}

The treatment of the traumatic herniation of the buccal fat pad includes two surgical procedures.^{11,13} In cases in which there is early evaluation and the protruded mass is small with minimal inflammatory change, the lesion is able to be repositioned immediately. The approximate period between the injury and the first visit was less than four hours in the reported cases.^{11,19} There was no difference in the postoperative course whether or not deep sutures were added to the superficial mucosal sutures.

If the mass is too large to replace in the limited laceration injury site or necrosis has appeared, it is recommended to excise the mass at the base. In both methods it is important not to traumatize the adjacent parotid papilla and duct. In our cases, the herniated mass could be replaced in case 1, and in case 2, since the size was relatively large and the inflammatory change had progressed, the mass was excised. To our knowledge, there have been no reported cases of recurrence.³⁻¹⁹

The differential diagnosis includes pyogenic granuloma, inflammatory pseudotumor, foreign body granuloma, traumatic neuroma, lipoma, hemangioma, and salivary neoplasm. Generally a history of trauma, an absence of mass prior to the accident, the specific anatomic site, and adipose appearance might serve to diagnose. However, inflammatory pseudotumor has the potential for an increase during a short period and we experienced a rare case of post-traumatic spindle cell nodule misdiagnosed clinically as a herniation of the buccal fat pad.²⁴ Therefore, when the mass was excised, the histological examination was needed.

There are two probable factors in the exclusive occurrence of the lesion in children. Firstly, the buccal fat pad is particularly prominent in neonates and infants, and has an increased risk of herniation. Secondly, children frequently hold foreign objects in their mouths and subsequently are prone to be traumatized by them.^{11,18} As to the anatomic location of this lesion, Matarasso² suggested that a defect or weakness in the parotidomasseteric fascia of the region contributed to the occurrence.

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ABSTRACT OF THE SCIENTIFIC LITERATURE



THE EFFECT OF TOOTH PREPARATION ON MICROLEAKAGE BEHAVIOR

The interest in alternative methods of cavity preparation has grown in parallel with the increased use of adhesive restorative materials. This study evaluated the marginal leakage of composite restorations following preparation of the cavity using air abrasion alone, air abrasion plus acid-etching, and carbide bur preparation plus acid-etching. Microleakage was measured using 2 different techniques, i.e. silver nitrate staining and electrochemical leakage. Class V cavity preparations were made in 48 sound human premolars using a high-speed carbide bur under water-spray coolant or were roughly prepared with a high-speed handpiece then refined by air abrasion. The teeth were restored with Prime and Bond 2.1 (Caulk Dentsply) and Tetric Flow (Ivoclar Vivadent). Findings from the electrochemical and silver staining techniques indicate that acid etched cavities, regardless of preparation technique, exhibited significantly less microleakage than those prepared by air abrasion only. There was a lower incidence of leakage to the pulpal floor with the two groups of acid etched cavities, than with the air abraded tooth groups. The results from this study support findings in the literature that suggest that cavities prepared by air abrasion should also be acid etched to reduce susceptibility to microleakage.

Comments: Air abrasion alone does not produce sufficient surface roughness to prevent microleakage at the composite/tooth interface. Based on the results of this study, hard dental tissues should always be acid etched prior to any bonding procedure irrespective of the cavity preparation method. **PS**

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38 references