Post-traumatic pseudolipoma of the forehead

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A forehead lipoma is a rare finding in a child, and one that penetrates the underlying layers of muscle and bone to attach to dura has not previously been reported. Two such cases, both in children who underwent uneventful deliveries aided by forceps, are presented. Both lesions were present at birth and, based on clinical findings, were originally thought to be dermoid cysts. Dermoid cysts could not be ruled out with computed tomography and magnetic resonance imaging. Histopathology identified fibrofatty tissue consistent with lipoma. Both lesions extended from the subcutaneous tissue through the frontalis muscle and frontal bone to the dura. Given these findings and the history of forceps delivery, the most likely diagnosis is post-traumatic pseudolipoma. This lesion should be considered in the differential diagnosis of congenital lesions of the forehead, particularly if there is a history of forceps delivery or other trauma to the area.

Key Words: Dermoid cyst; Forceps injury; Lipoma; Midline forehead lesion; Post-traumatic pseudolipoma

A large number of differential diagnoses exist for congenital midline masses presenting on the forehead (1). The majority of these lesions are benign. The possibilities include dermoid cysts, encephaloceles, meningoceles, gliomas, vascular malformations, hemangiomas and eosinophilic granulomas, as well as lesions of bony origin such as fibrous dysplasia and osteomas, among others (2).

Traumatic lesions secondary to birth trauma can also present as midline forehead masses. Extracranial injuries most commonly include scalp abrasions and lacerations, caput succedaneum, cephalohematoma and subgaleal hemorrhage. Cranial injuries most commonly include linear or depressed skull fractures (3). These types of injuries have been more often associated with instrument-assisted (forceps) deliveries than with spontaneous deliveries (4). The following two patients were both delivered with forceps and presented with soft tissue masses of the forehead that extended from subcutaneous fat through to the underlying dura.

CASE PRESENTATIONS

Patient 1

A 10-year-old girl was referred for the treatment of a congenital lesion on her forehead. She was born at 37 weeks' gestation after an uncomplicated pregnancy that required forceps during delivery. A central forehead soft tissue mass with surrounding ecchymosis was noted at birth. No treatment was performed, because it was thought to be a hematoma secondary to the forceps. Unfortunately, the lesion persisted, growing proportionally with the patient. She was otherwise healthy with normal

Un pseudolipome post-traumatique du front

Le lipome du front est rare chez l'enfant, et on n'a jamais déclaré de lipome qui pénètre les couches musculaires et osseuses sous-jacentes pour se fixer à la dure-mère. Deux cas de ce genre, tous deux chez des enfants qui avaient vécu un accouchement normal par forceps, sont présentés. Les deux lésions étaient visibles à la naissance, et d'après les constatations cliniques, on croyait qu'il s'agissait de kystes dermoïdes. Les kystes dermoïdes ne pouvaient pas être écartés par la tomodensitométrie et l'imagerie par résonance magnétique. L'histopathologie a permis de révéler des tissus fibrolipidiques correspondant à un lipome. Les deux lésions touchaient les tissus sous-cutanés, traversaient le muscle du front, puis l'os frontal jusqu'à la dure-mère. Étant donné ces constatations et les antécédents d'accouchement par forceps, le diagnostic le plus probable en est un de pseudolipome post-traumatique. Il faudrait envisager cette lésion dans le diagnostic différentiel des lésions congénitales du front, notamment en présence d'antécédents d'accouchement par forceps ou d'autres traumatismes de cette région.

development. She did not have hypertelorism. Clinically, the lesion measured 20 mm × 10 mm, and was soft and tethered to the underlying bone. An osseous defect was palpable. All cranial nerves were intact, and the remainder of the head and neck examination was normal. Computed tomography imaging identified a mass of tissue continuous with the subcutaneous tissue that was associated with a small, well-corticated, full-thickness defect involving the left frontal bone (just off midline) measuring approximately 15 mm × 15 mm. Given the clinical and radiological appearances, the most likely diagnosis was thought to be a dermoid cyst.

To avoid a forehead incision, and to allow for adequate exposure and possible craniotomy, a coronal flap was used for exposure. Intraoperatively, the lesion was found to be fibrofatty, extending from the subcutaneous tissue through the frontalis muscle, and was attached to the dura by a fibrous stalk. It was not cystic, and it did not have a capsule. The bone defect was closed with cortical bone graft. The pathology report identified the submitted tissue as fibrofatty, suggestive of lipoma. Six months postoperatively, the patient remained unsatisfied with the cosmetic appearance, because a visible bulge remained on the forehead at the site of the excised lesion. This was thought to be secondary to the frontalis muscle defect. Direct excision was required to restore normal forehead contour.

Patient 2

A four-month-old healthy female infant presented with a midline forehead mass at the root of the nose. The lesion was first noted at birth. The pregnancy was unremarkable; however, the

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delivery did require forceps assistance. On clinical examination, the lesion measured 25 mm × 15 mm and was tethered to the underlying bone. The overlying skin was erythematous and nontender. The remainder of the examination was within normal limits. There was no hypertelorism noted. No punctum or sinus was seen. Given the clinical presentation and location of the lesion, the provisional diagnosis was a dermoid cyst. Computed tomography imaging identified a frontal bone defect at the metopic suture in continuity with the lesion. Magnetic resonance imaging suggested that the mass was most consistent with a dermoid cyst. Given this finding, the patient was taken to the operating room, and a coronal flap was elevated for exposure and to maximize cosmesis. Intraoperatively, no distinct lesion or cyst was identified. Fibrofatty tissue was seen contiguous with the subcutaneous fat extending through frontalis muscle and tethered to the underlying dura. There was no capsule. Excision was performed at the dural level, and the tissue was sent for pathology. Histological evaluation identified mature fibroadipose tissue that was suggestive of lipoma. Three months postoperatively, a soft tissue bulge on the forehead persisted and was thought to be secondary to the underlying frontalis muscle defect. No further surgery has been performed to date.

DISCUSSION

Dermoid cysts are the most common extracranial masses seen in childhood (5). They are most frequently found on the head and neck (6). In a study by Crawford (7), 22.6% of dermoid cysts of the scalp were found to be midline lesions, 29.8% were associated with a bony defect and 2.4% had penetrated the cranium. Thus, given the clinical presentation and preoperative imaging results in both cases, dermoid cysts were considered the likeliest diagnosis. The history of forceps delivery in both patients was not thought to be contributory at the time of presentation.

Traumatic lesions are the second most common lesions seen at birth (8). These types of lesions can occur on the head and neck, and can be a result of forceps delivery (9). Soft-tissue trauma and subsequent hematoma leading to lipoma formation has been described; however, it remains a controversial topic. Lipomas have been reported involving the hips, buttocks and thighs of women subsequent to motor vehicle collisions (10). Brooke and MacGregor (11) have named this phenomenon 'post-traumatic pseudolipoma', owing to the absence of a true capsule (11). Histologically, the fat itself is indistinguishable from normal fat or de novo lipomas, and is simply described as normal fat in an abnormal location.

Adair et al (12) were the first to report the role of trauma in the formation of lipoma, but few reports have attempted to explain a mechanism. Initial theories were purely mechanical: normal deep fat tissue prolapsing through Scarpa's fascia, ruptures in the normal septa surrounding adipose tissue and scar contractures secondary to shearing fascial injury (11,13,14). Penoff (15) was the first to question the mechanical theory, and Signorini and Campiglio (16) discussed the possibility of preadipocyte differentiation to adipocytes by trauma. Copcu and Sivrioglu (17) have described 10 cases of post-traumatic lipomas and have speculated that the formation of a post-traumatic lipoma can only occur with fat necrosis as a trigger, setting off a cascade of local inflammation to affect adipocytes and promote lipoma formation. Other reported cases have included

buccal fat pad herniation into the oral cavity after blunt facial trauma and iatrogenic injury secondary to dental surgery (18,19).

Given the histopathology results in both cases in the present report, the most likely diagnosis is post-traumatic pseudolipoma. Because both patients presented with similar lesions, in a similar location at birth following a forceps delivery, it is likely that trauma was an etiological factor. Regardless of the etiology, however, this type of lesion should be considered in the differential diagnosis of congenital tumours of the head and neck. In addition, because the postoperative esthetic results in both cases were not satisfactory, these lesions may best be managed by direct excision with suturing of the frontalis muscle to eliminate tissue prolapse postoperatively, with or without reconstruction of the cranial defect (depending on its size).

CONCLUSIONS

We present two cases of subcutaneous fibrofatty lesions penetrating through muscle and bone and attaching to dura, presumably the result of iatrogenic trauma after forceps delivery. These cases likely represent post-traumatic pseudolipomas of the forehead, an entity that has not yet been described and should be considered as part of the differential diagnosis of congenital tumours of the forehead.

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