Surgical excision of Infantile Haemangiomas: a technical refinement to prevent bleeding complications.

L'escissione chirurgica degli emangiomi infantili: un espediente tecnico per la prevenzione dei sanguinamenti.

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Key words: Haemangioma, Bleeding, Haemostasis

Abstract

Purpose: The aim of the study is to improve operative speed and precision of haemangiomas excision. Methods: Case-report: haemangioma is a common affection of the 8% of the population during the neonatal period. In complicated cases and involution sequelae surgical treatment is the first choice. The Authors propose a surgical refinement to prevent intraoperative bleeding. Methods: several suture stitches were placed around the hemangioma. The edges of the lesion became more defined, thus allowing accurate excision. Results and Conclusions: Haemangiomas are characterized by rich blood supply. Surgery is often hindered by massive bleeding and Temporary placement of full-thickness sutures, surrounding the hemangioma, allowed a noticeable improvement in hemostasis precision and greater definition of the margins of the hemangioma.

Introduction

Infantile haemangiomas are extremely common, affecting 5-10% of Caucasian infants.[1-2] Females are three times more frequently affected than males,[3] and the risk increases significantly in premature infants with low birth weight (under 1200 g at birth, 23%). Despite being ubiquitous, haemangiomas most often affect head and neck (60%), followed by trunk (25%) and extremities (15%). Within the face, the cheek, upper lip, and upper eyelid are often involved.[4-5-6] The natural behavior of a haemangioma consists of three phases: proliferation, plateau and involution phase. Infantile haemangiomas are typically not present at birth (80%) and appear within the first few weeks of life like an eritematous macular area, often preceded by a blanched area or a pale halo surrounding a telangiectasic patch. Then this macular spot is characterized by rapid proliferation which can usually last until the twelfth mounth of life. The uncontrolled rapid growth of emangioma can destroy elastic fibers, cause ulcerations resulting in telangiectases, cutaneous laxity, fibrofatty residuum and anestetic scarring.[7] During the plateau and regression phases, regressive phenomena can occur and continue for the next 5 to 10 years.[8] Bowers et Al. reported that 50% of the haemangiomas have disappeared by the age of 5 years and 70% by the age of 7 years, with continued improvement in the remaining children until age 10 years. Once the haemangioma is involuted, the final appearance may be that of normal skin in only 6% of children.[9] However other reports show that 97% completely disappear or regress and become aesthetically acceptable. In about 50% of cases haemangiomas will leave small cosmetic sequelae like telangiectasiae, sagging, excessive atrophic skin, scarring or pigment changes.[10] For these reasons, surgical treatment is suitable in complicated cases. Treatment options include serial observation, laser photocoagulation, medical therapy, surgery, or multimodality therapy and are all dependent on the age of the patient, the stage of the lesion, anatomical features and functional considerations. Surgery may be difficult due to the anatomical site, the extension of haemangioma and intraoperative bleeding. The Authors propose a simple and effective method to prevent excessive intraoperative bleeding.

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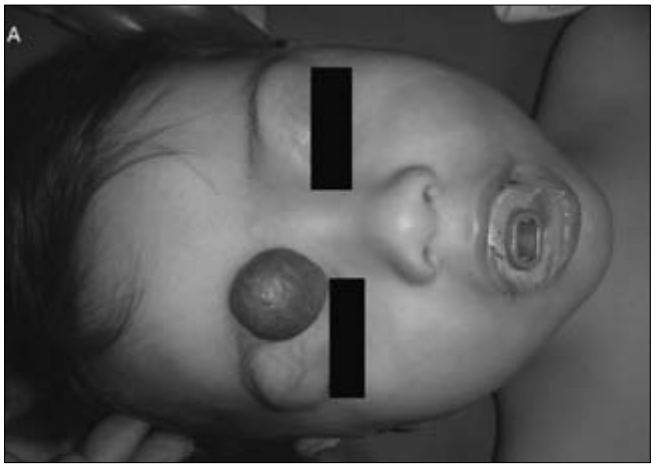

Figura 1.
Hemangioma of the upper eyelid region; Preoperative view

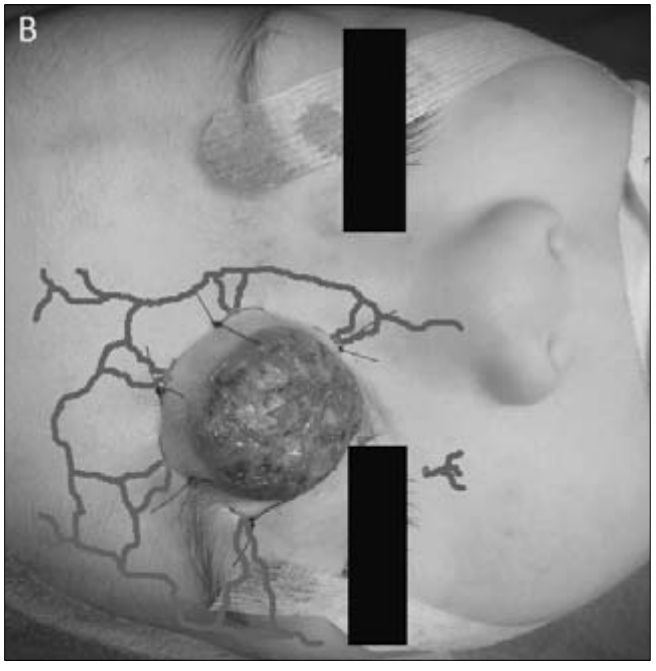

Figura 2.
Schematic Image: in evidence the main vessels ligated with a careful hemostasis

Case presentation

The Authors report their experience on the case of a patient suffering of childhood haemangioma of the upper eyelid region. A 7-year old, caucasic female presented with a perinatal history of infantile haemangioma of the upper eyelid. The lesion was esophytic, 4 cm in diameter, round in shape, erythematous, yielding eyelid ptosis and compromised visual field of the ipsilateral eye (Fig 1). On physical examination, neither orbicularis oculi muscle impairment, nor other neurological deficit were found. The magnetic resonance imaging showed a well-circumscribed, low-flow haemangioma, with two main vascular pedicles

The presented case was clinically characterized by frequent bleeding. For this reason, we decided to remove it and the timing of surgery was anticipated.

Under general anesthesia, several suture stitches were placed around the haemangioma (Fig 2). The borders of the lesion became more defined, thus allowing accurate excision. The main vessels were ligated and careful hemostasis performed. The hemostatic surrounding stitches were removed and the hemostasis controlled. The lesion extended within the fibers of the orbicularis oculi muscle, which were reconstructed. A continuous intradermic suture was placed. The overall intraoperative bleeding was very poor.

The patient was discharged on the second day after surgery and followed-up at 5 days, 2 weeks, 1 month and 6 months (Fig 3).

Histologic examination showed features of highly proliferating haemangioma.

Discussion

Periocular haemangiomas are potentially blinding and disfiguring lesions. Conventional treatments for infantile haemangioma include the use of corticosteroids, laser, surgery, and immunomodulator therapy. However, none of them is complication-free.

The first choice treatment is represented by corticosteroids. Greenberger et al.[11,12] showed that dexamethasone disrupted vasculogenesis in stem cells derived from infantile haemangioma via inhibition of vascular endothelial growth factor (VEGF)-A expression. Intralesional steroid injection may cause local skin effects such as hypopigmentation and fat atrophy; other rare, but severe, adverse effects include adrenal dysfunction,[13] elevated intraocular pressure,[14] and central retinal artery occlusion.[15,16] For large haemangiomas that may require highdose, long-term systemic steroids, there is an increased risk of developing hypertension, adrenal cortical insufficiency, immunosuppression, and gastrointestinal bleeding.[17, 18, 19] Less severe but more common side effects include personality change, sleep disturbance, and cushingoid features.[18]

Pulsed-dye laser is a second-line treatment, with best results achieved during the early proliferative and late regressing phases when the lesion is flattest.[20] Skin atrophy and pigmentary change are the most common adverse effects.[21-22]

Finally, cyclophosphamide and interferon-A are powerful and effective drugs, suitable in life- or sight-threatening infantile haemangioma, because they can be associated with myelosuppression, hepatotoxicity, and neurotoxicity.[23]

Recently, systemic and topical beta-blockers have been used to successfully treat infantile haemangioma. Their mechanism of action is uncertain, but plausible hypotheses include vasoconstriction, modulation of pro-survival signal transduction pathways, and endothelial cell apoptosis. Whereas no life-threatening adverse events from beta-blockers have been described, there have been reports of bradycardia, hypotension, bronchospasm, hypoglycemia, and electrolyte disturbances resulting from systemic use of propranolol. Sleep and gastrointestinal disturbances have also been frequently reported.[24]

Surgical excision of haemangioma is indicated in well circumscribed subcutaneous lesions that have failed to response to medical treatment, rapidly grow, or cause significant orbital deformity.

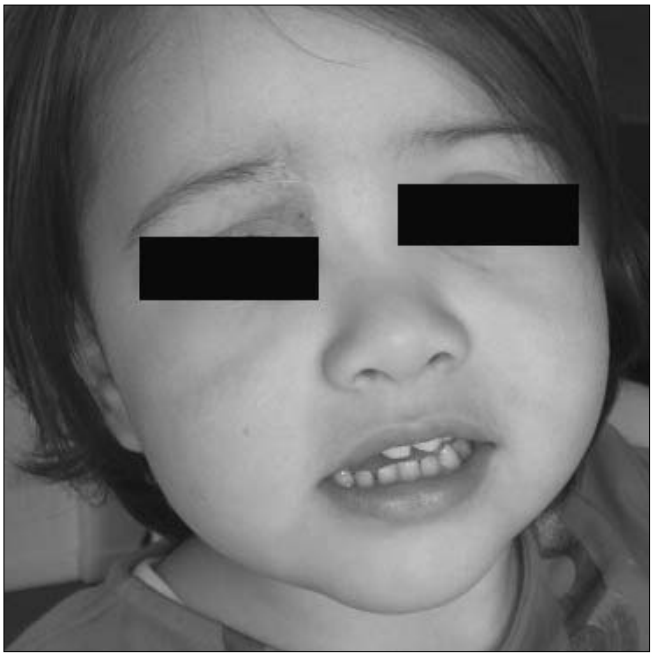

Figura 3.
post operative view (6 months)

Haemangiomas are characterized by rich blood supply. Indeed, surgery is often hindered by massive bleeding, impairing the correct visualization of the operative field and constitutes a risk for hemodynamic unbalance. Usually, compression is exerted on the area surrounding the lesion by the application of a cut bowl or directly by the surgical assistant's acupressure. Nevertheless, these methods greatly reduce the operating space, involve both the surgical assistant's hands and do not ensure a constant and uniform pressure. In our experience, a simple and effective way to prevent bleeding is the procedure described above. Temporary placement of full-thickness sutures, surrounding the haemangioma, allowed a noticeable improvement in hemostasis precision and greater definition of the margins of the haemangioma, leading to considerable tissue sparing and making the reconstructive procedure easier.

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