

# Vascular lesions treated with cerclage and radiofrequency electrocauterization

## *Lesões vasculares tratadas com cerclagem e radiofrequência*

### ABSTRACT

Capillary hemangioma is a benign tumor comprised of endothelial cells, common in childhood, which frequently disappears on its own. Port-wine stains are vascular malformations caused by capillary dilatation, initially characterized by macules with colors ranging from rose to violaceous red. Present at birth, they are usually permanent, and can thicken and cause deformities. Many treatments have been proposed: cryotherapy, surgery, corticotherapy, radiotherapy, and laser therapy. However, such treatments involve technical difficulties, high costs, complications, or unaesthetic results. This study proposes a new, easy to perform and cost effective association of techniques: percutaneous cerclage and radiofrequency electrocauterization for the treatment of hypertrophic lesions of vascular origin.

**Keywords:** hemangioma; surgery; therapeutics.

### RESUMO

*Hemangioma capilar é tumor benigno de células endoteliais, comum na infância, com história natural de involução espontânea. As manchas vinho do porto são malformações vasculares constituídas por dilatações capilares e caracterizadas inicialmente por manchas de coloração rosada a vermelho-violácea. Presentes ao nascimento, são habitualmente permanentes, podendo tornar-se espessadas e causar deformidades. Muitos tratamentos têm sido propostos – crioterapia, cirurgia, corticoterapia, radioterapia e laserterapia –, porém envolvem dificuldades técnicas, alto custo, complicações ou resultados inestéticos. Neste trabalho, propõe-se nova associação de técnicas, de fácil execução e baixo custo: a cerclagem percutânea e eletrocirurgia por radiofrequência para tratamento de lesões hipertróficas de origem vascular.*

**Palavras-chave:** hemangioma; cirurgia; terapêutica.

### INTRODUCTION

In 1982, Mulliken and Glowacki classified vascular lesions into two categories; hemangiomas and vascular malformations, based on their cellular, clinical, and history characteristics.<sup>1,2</sup>

Hemangiomas are tumors secondary to vascular anomalies that involve the proliferation of endothelial cells.<sup>3</sup> Its prevalence in children is 10–12% during the first year of life. The lesions are solitary in 80% of the cases, and occur more frequently in the head (60%), trunk (25%) and extremities (15%).<sup>3,4</sup> The hemangiomas' growth phase starts in the first weeks of life, and around 30% of the lesions involute before the child is three years old, 50% before the age of five, and 85–90% before the age of nine. In most cases, an expectant approach is adopted; however in 10–15% of cases the lesions behave in a manner that requires intervention.<sup>3,5-7</sup>

## Surgical pearl

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Unlike hemangiomas, vascular malformations present a regular reproductive cycle of endothelial cells. Most lesions (90%) are recognized at birth, presenting growth proportional to that of the child; most do not disappear spontaneously. This group includes the port-wine stain (PWS), which affects 0.3% of the population; approximately 80% of these lesions are located on the face or neck. They are usually unilateral and segmentary, respecting the median plane and increasing proportionally with the child's growth. There is no tendency towards spontaneous regression, and they darken and enlarge with age, mainly after the individual reaches his/her forties. In that period, the stains do not respond to laser treatment, and surgical correction may be necessary.<sup>1,2</sup>

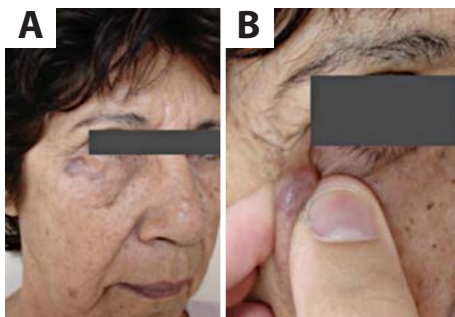
The cerclage technique was initially described by gynecologists in the 1950s for treating istmo-cervical incompetence, late-term miscarriages and/or premature births caused by early dilation of the cervix. Cerclage (“encircling suture”) was used to keep the cervix closed to prevent its dilatation before the end of pregnancy, to prevent premature birth. Adapting the concept of cerclage, we describe two cases in which percutaneous sutures were performed to treat hemangiomas and PWS surgically.<sup>9</sup>

**METHODS**

We present two patients (52-year-old female and 72-year-old male) with hemangioma in the right inferior eyelid (Figure 1) and PWS on the left side of the face, respectively. Both described the lesions as present at birth and previous treatments as unsuccessful.

We describe the steps of the surgical procedures of the cerclage of the vascular lesions and subsequent radiofrequency, in addition to the post-operative aspects of the two cases.

**STEPS OF THE SURGICAL PROCEDURES**

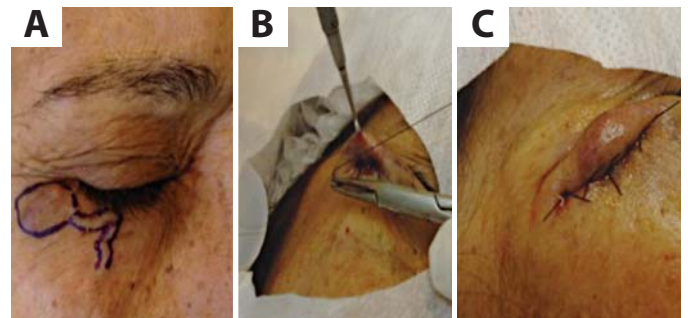


**Figure 1 (A,B)** - Lesion in the right inferior eyelid and surgical marking

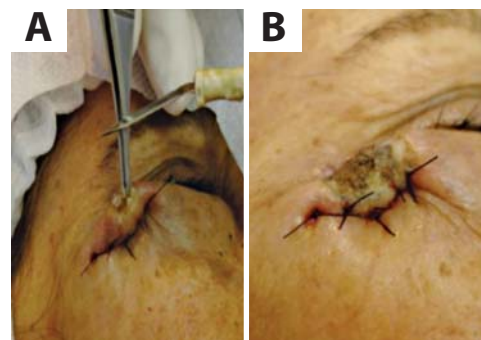
Table 1: Summary of surgical steps	
Case 1	Case 2
1. Cerclage of the lesion	1. Cerclage of the lesions
2. Radioelectrosurgery of the lesion	2. Surgical removal of the lesions
3. Removal of the stitches 15 days after	3. Radioelectrosurgery
4. Superior and inferior bilateral blepharoplasty	4. Removal of the stitches 15 days after

The proposed surgical stages (Table 1) were: surgical marking (Figure 2) and anesthetic infiltration with 2% lidocaine with vasoconstrictor; the percutaneous cerclage begins with the encircling suture in the base of the hypertrophic portion of the vascular lesion with 4.0 nylon sutures (Ethicon ®) (Figures 2B and 2C). This kind of suture was chosen for its resistance, tension force and flexibility, and the fact that a sliding stitch might be more easily tightened. It is a non-absorbable suture that, by definition, would produce little tissular reaction.

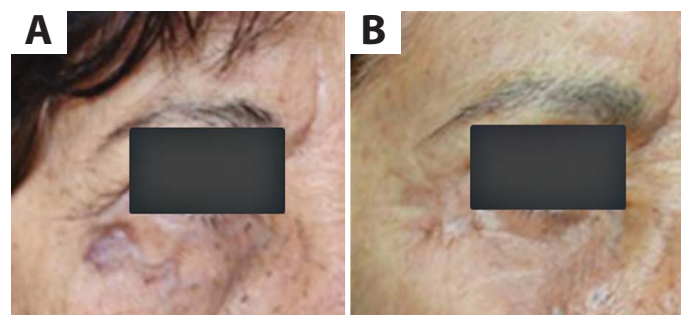
Subsequently, the electrocauterization of the tissue just above the cerclage was performed, using forceps that must be touched by the electrocautery, aiming at completely electrocauterizing the hypertrophic portion of the vascular lesion through radiofrequency (Figure 3). A scalpel incision was not carried out in the first case; the aesthetic treatment of the periorbital region was completed later with superior and inferior bilateral blepharoplasty (Figure 4). In the second case (Figure 5), due to the great size of the PWS' hypertrophic portion, following the anes-



**Figure 2 (A, B, C)** - Percutaneous cerclage with 4.0 nylon suture



**Figure 3 -**  
A: Radioelectrosurgery  
B: Immediate post-operative result



**Figure 4 (A, B)** - Initial and final lesions



**Figure 5** - Port-wine stain on the left side of the face. Note hypertrophic, nodular – with shapes resembling grapes – causing distortion of facial features



**Figure 6** - Anesthetic infiltration



**Figure 7** - Cerclage with 4.0 nylon thread

thetia and the cerclage (Figures 6 and 7), the excision of the prominent region was accomplished with a scalpel (Figure 8). Afterwards, electrocoagulation through radiofrequency was performed in the base of the lesion. It is important to note that there is almost no bleeding (only minor in the second case) during the procedure, with tissular retraction occurring immediately (Figure 9). After 15 days, the cerclage's suture is removed, revealing a satisfactory aesthetic result (Figure 10).

## DISCUSSION

In the descriptions of the combined techniques – cerclage of the hypertrophic vascular lesion and subsequent electrocoagulation through radiofrequency – it is possible to verify a reduction in the transoperative bleeding and, more importantly, of the surgical complications in the immediate and late post-operative periods. We have demonstrated how to accomplish a technically straightforward surgery, in two surgical visits, for treating large hemangiomas and PWS located on the face – where the aesthetic factor can cause psychological and social problems. We draw attention to the fact that the final aesthetic result was quite satisfactory for the patients, thus confirming that this combination of techniques is an alternative to surgical treatment for hemangiomas and PWS.

This combination of surgical techniques for the treatment of hemangioma hypertrophic lesions and PWS of considerable size comprises simple and practical outpatient procedures and avoids interurrences inherent to the disorder, such as intense bleeding. It is confirmed, therefore, that it is frequently possible to conduct simple and effective procedures by employing creativity and the correct combination of surgical techniques.

## CONCLUSIONS

The technique described:

- 1) Is straightforward, quick, and cost effective.
- 2) Presents low morbidity (low rate of complications) due to the low invasiveness character, and does not require hospitalization.



**Figure 8** - Surgical removal of hypertrophic lesions



**Figure 9** - Immediately after radioelectrosurgery



**Figure 10** - Appearance after undergoing surgical procedure

- 3) Has a precise indication as an alternative treatment for vascular hemangiomas and PWS types of hypertrophic lesions located on the face.
- 4) Presents encouraging short- and long-term results.●

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