

# **NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE**

## **INTERVENTIONAL PROCEDURES PROGRAMME**

### **Interventional procedures overview of intralesional photocoagulation of subcutaneous congenital vascular disorders**

#### ***Introduction***

This overview has been prepared to assist members of the Interventional Procedures Advisory Committee (IPAC) advise on the safety and efficacy of an interventional procedure previously reviewed by SERNIP. It is based on a rapid survey of published literature, review of the procedure by Specialist Advisors and review of the content of the SERNIP file. It should not be regarded as a definitive assessment of the procedure.

#### ***Date prepared***

This overview was prepared by Bazian Ltd in May 2003.

#### ***Procedure name***

- Intralesional photocoagulation of subcutaneous congenital vascular disorders.

#### ***Specialty societies***

- British Association of Plastic Surgeons.
- British Society of Dermatologists.

#### ***Description***

Intralesional photocoagulation is a laser treatment for people with congenital abnormalities of the blood vessels of the skin (including haemangiomas, port wine stains and arteriovenous malformations). Often these abnormalities require no treatment because they may spontaneously resolve or cause only mild cosmetic problems. Laser treatment is often recommended for lesions near the eyes or orifices, or if the lesions bleed, ulcerate or become infected.

External laser treatment of vascular abnormalities may not be effective because the laser beam does not penetrate far beneath the skin. Intralesional photocoagulation involves inserting a laser fibre into the lesion to deliver the light deep within it.

## **Efficacy**

According to the literature found, intralesional photocoagulation was effective at reducing the size of subcutaneous vascular malformations in most people in the short term. The long-term effects are not known.

According to the Specialist Advisors, intralesional photocoagulation is of uncertain efficacy.

## **Safety**

According to the literature found, intralesional photocoagulation may cause ulceration in 20% to 25% of people. Treatment to lesions of the face may damage the facial nerve.

According to the Specialist Advisors, intralesional photocoagulation may cause scarring, contractures, nerve damage or arteriovenous malformations.

## ***Literature reviews***

### **Appraisal criteria**

Studies of intralesional laser therapy for vascular malformations with clinical outcomes were included.

### **List of studies found**

No systematic reviews, randomised controlled trials or non-randomised controlled studies were found.

Seven case series were found. The four largest are described in the table.<sup>1-4</sup>

The Appendix gives references to smaller studies.

## Summary of key efficacy and safety findings

Study details	Key efficacy findings	Key safety findings	Key reliability, generalisability and validity issues
<p>Burstein, 2000<sup>1</sup></p> <p>Case series</p> <p>USA</p> <p>100 children with haemangiomas of head and neck, periorbital region, trunk or extremities, age range 1 month to 16 years, mean age 27 months</p> <p>Follow up: 6–36 months, mean 18 months.</p>	<p>All 100 children had 'response to treatment' (not defined) within 1 week</p> <p>46 children had &gt; 90% reduction in size of lesion</p> <p>54 children had 50–90% reduction in size of lesion</p> <p>76 patients had subsequent surgical resection and reconstruction</p>	<p>Residual weakness of branches of facial nerve: 2 children</p> <p>Small burns: 2 children</p> <p>Superficial ulceration: 20 children</p> <p>Transfusion during treatment: 2 children</p>	<p>Uncontrolled case series.</p> <p>Fairly large study.</p> <p>Follow up short for some people.</p> <p>Children only.</p>
<p>Achauer, 1999<sup>2</sup></p> <p>Case series</p> <p>USA</p> <p>23 people with periorbital haemangiomas</p> <p>Follow up: 1–8 months</p>	<p>50% or more reduction in size of lesion within 8 months: 83%</p>	<p>Infection: 1 person</p> <p>Ulceration: 4 people</p>	<p>Uncontrolled case series.</p> <p>Small study.</p> <p>Follow up short for many participants.</p> <p>Age group not provided.</p>

<p>Chang, 1999<sup>3</sup></p> <p>Case series</p> <p>Taiwan</p> <p>12 people with vascular anomalies of the tongue (10 venous malformations and 2 haemangiomas), mean age 23 years, range 15 months to 46 years</p> <p>Follow up: 3–20 months, mean 10 months</p>	<p>All patients had reduction in size of lesion</p> <p>Mean reduction in size of lesion 87%, range 60–100%</p>	<p>Ulceration: 2 people</p> <p>Continued gradual bleeding requiring surgical control: 1 person</p> <p>Scar contracture of lateral commissure (revised by Z plasty): 1 person</p>	<p>Uncontrolled case series.</p> <p>Small study.</p> <p>Vascular abnormalities of the tongue only.</p> <p>Study included adults.</p>
<p>Achauer, 1998<sup>4</sup></p> <p>Case series</p> <p>USA</p> <p>12 children with haemangiomas of the head and neck, mean age 13 months, range 1 to 42 months</p> <p>Follow up: 2–16 months</p>	<p>&gt; 50% reduction at 3 months: 92%; remainder &gt; 50% reduction by 6 months</p>	<p>Ulceration: 3 children</p>	<p>Uncontrolled case series..</p> <p>Small study.</p> <p>Haemangiomas of the head and neck in children only.</p>

## **Validity and generalisability of the studies**

Only small case series were found. These provide limited evidence of the efficacy of intralesional photocoagulation compared with other treatments.

## **Specialist Advisors' opinions**

*Specialist advice was sought from consultants who have been nominated or ratified by their Specialist Society or Royal College.*

- Concerns about safety and efficacy.
- Special training and facilities required.

## **References**

1. Burstein FD, Simms C, Cohen SR, Williams JK, et al. Intralesional laser therapy of extensive hemangiomas in 100 consecutive pediatric patients. *Annals of Plastic Surgery* 2000; 44: 188–94.
2. Achauer BM, Chang C-J, VanderKam VM, Boyko A, et al. B. Intralesional photocoagulation of periorbital hemangiomas. *Plastic & Reconstructive Surgery* 1999; 103: 11–9.
3. Chang CJ, Fisher DM, Chen YR. Intralesional photocoagulation of vascular anomalies of the tongue. *British Journal of Plastic Surgery* 1999; 52: 178–81.
4. Achauer BM, Celikoz B., VanderKam VM. Intralesional bare fiber laser treatment of hemangioma of infancy. *Plastic & Reconstructive Surgery* 1998; 101: 1212–7.

## Appendix: References to studies not described in the table

Reference	Number of participants
Clymer MA, Fortune DS, Reinisch L, Toriumi DM, et al. Interstitial Nd:YAG photocoagulation for vascular malformations and hemangiomas in childhood. <i>Arch Otolaryngol Head Neck Surg</i> 1998; 124: 431–6.	10
Apfelberg DB. Intralesional laser photocoagulation-steroids as an adjunct to surgery for massive hemangiomas and vascular malformations. <i>Annals of Plastic Surgery</i> 1995; 35: 144–9.	7
Wimmershoff MB, Landthaler M, Hohenleutner U. Percutaneous and combined percutaneous and intralesional Nd:YAG-laser therapy for vascular malformations. <i>Acta Dermato-Venereologica</i> 1999; 79: 71–3.	2