Treatment of Infantile Hemangiomas of the Head and Neck

16

Milton Waner and Teresa O

The location of a hemangioma is not random [1]. Both focal and segmental hemangiomas are found at sites of predilection. Their anatomical location and extent are thus predictable. When confronted with a patient with a hemangioma, the following decisions should be addressed:

Should we treat?

How should we treat?

When should we treat?

The decision *should* we treat is based on a number of simple variables:

1. Lesions that are clearly exposed warrant treatment (at least 60 % of hemangiomas are central facial lesions).
2. Lesions that are unlikely to involute completely and where treatment will result in a better outcome (50 % of lesions do not involute completely [2]; after the age of 4 years, further involution in any given hemangioma is unlikely).
3. Complications such as ulceration, functional impairment, cardiac failure, and disfigurement.
4. Airway hemangiomas and periocular/orbital hemangiomas.

The decision "*how* to treat" should be made by a multidisciplinary team. The tendency to use one modality for all lesions should be avoided. The following are important considerations:

1. The type of lesion (focal or segmental)
2. The depth of the lesion
3. The stage of the lesion (proliferating, quiescent, or involuting)

In general, propranolol has replaced corticosteroids as a first line of therapy [3]. All early lesions should be given a trial of propranolol (or timolol if superficial) unless there is a contraindication or some other objection to its use. It should be kept in mind that propranolol does cross the blood-brain barrier and that short-term memory loss is a known side effect in the elderly. For this reason, nadolol, which does not cross the blood-brain barrier and appears to be as effective, is advocated by some. Topical propranolol in one or other form has also become popular for very superficial lesions, and unfortunately, some have used it for deeper lesions [4]. Its efficacy for deeper lesions is in doubt, and the degree of absorption has not yet been determined. One should therefore be cautious when dosing a patient.

A very high percentage of patients respond to propranolol, but it appears that focal lesions do not respond as well. If treated very early, a lesion may shrink and "disappear" or simply stop

M. Waner, MB, BCh (Wits), FCS (SA), MD (✉)
Teresa O, MD, M.Arch
Department of Otolaryngology, Center for Vascular Birthmarks, Vascular Birthmark Institute, New York Head and Neck Institute, Lenox Hill Hospital and Manhattan Eye, Ear, and Throat Hospital, New York, NY, USA
e-mail: Mwmd01@gmail.com; to@vbiny.org

R. Mattassi et al. (eds.), *Hemangiomas and Vascular Malformations: An Atlas of Diagnosis and Treatment*, DOI 10.1007/978-88-470-5673-2_16, © Springer-Verlag Italia 2009, 2015

growing. At present, the proportion and the type of lesion that falls into each of these groups have not yet been determined. Our euphoria with this drug is still prevalent. Realistically, the response to systemic propranolol may be one of the following:

1. The response may be excellent (almost complete or complete shrinkage of the lesion).
2. The lesion may only partially respond (50 % or less). This is more often seen with focal lesions.
3. The lesion may fail to respond. This is seen with some fully grown lesions.

In a small series, 50 % of patients treated with propranolol needed treatment with some other modality (laser or surgery) in order to achieve a satisfactory response. Our belief is that early treatment with propranolol is most beneficial. Lesions will either respond and shrink or simply stop growing. If the lesion being treated was small at the time of commencement, then either of these responses is acceptable. However, when faced with a large lesion, a failure to progress without appreciable shrinkage is not acceptable. In these cases, surgery should be considered. In addition to this, residual cutaneous involvement can and should be treated with a laser [5].

We therefore only surgically intervene when the lesion warrants treatment, has failed to respond, or inadequately responds to propranolol; in some focal ulcerated hemangiomas in whom surgery will ultimately be needed; and in lesions that are obstructing the airway or visual axis where resolution is urgent. Our surgical approach is determined by the depth of the lesion and its anatomical location. The following examples demonstrate our approach.

Paranasal Hemangiomas

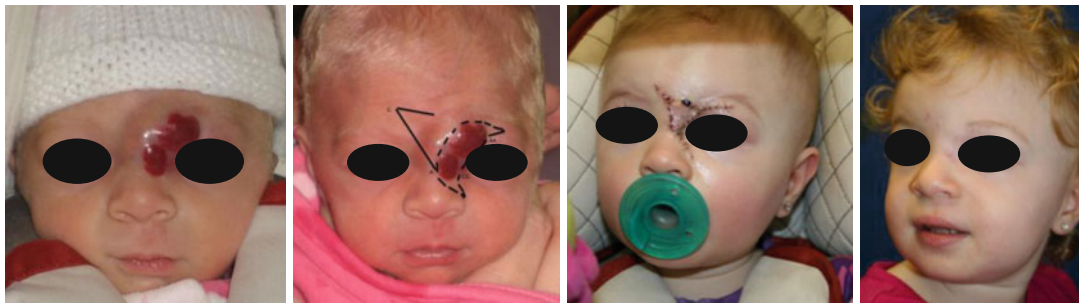

Fig. 16.1 A child with a compound (superficial and deep components) left glabellar/paranasal IH. During surgery an elliptical incision was used to remove the IH. A local rotation flap was used, and the standing cone was corrected 3 weeks later. The patient has undergone scar revision and multiple laser treatments. These procedures were done prior to the discovery of propranolol. Since we do see partial or nonresponders to propranolol, the technique of treatment described above is still relevant

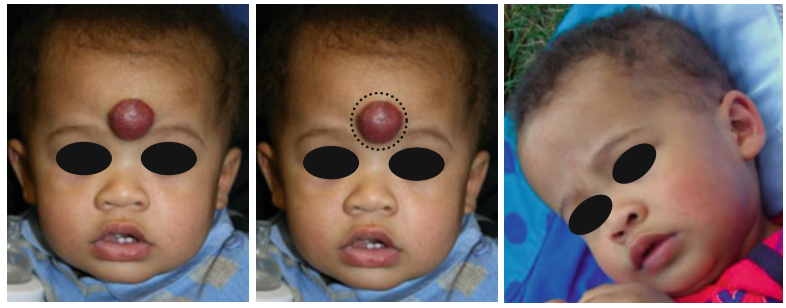

Fig. 16.2 A child with a midline forehead hemangioma. This was a pedunculated lesion, and after much discussion, the parents elected to proceed with surgery. The lesion was resected through a vertical midline ellipse (the *dotted line* represents the incision lines). Since this was a pedunculated lesion, there was sufficient skin left to prevent significant medial movement of the brows

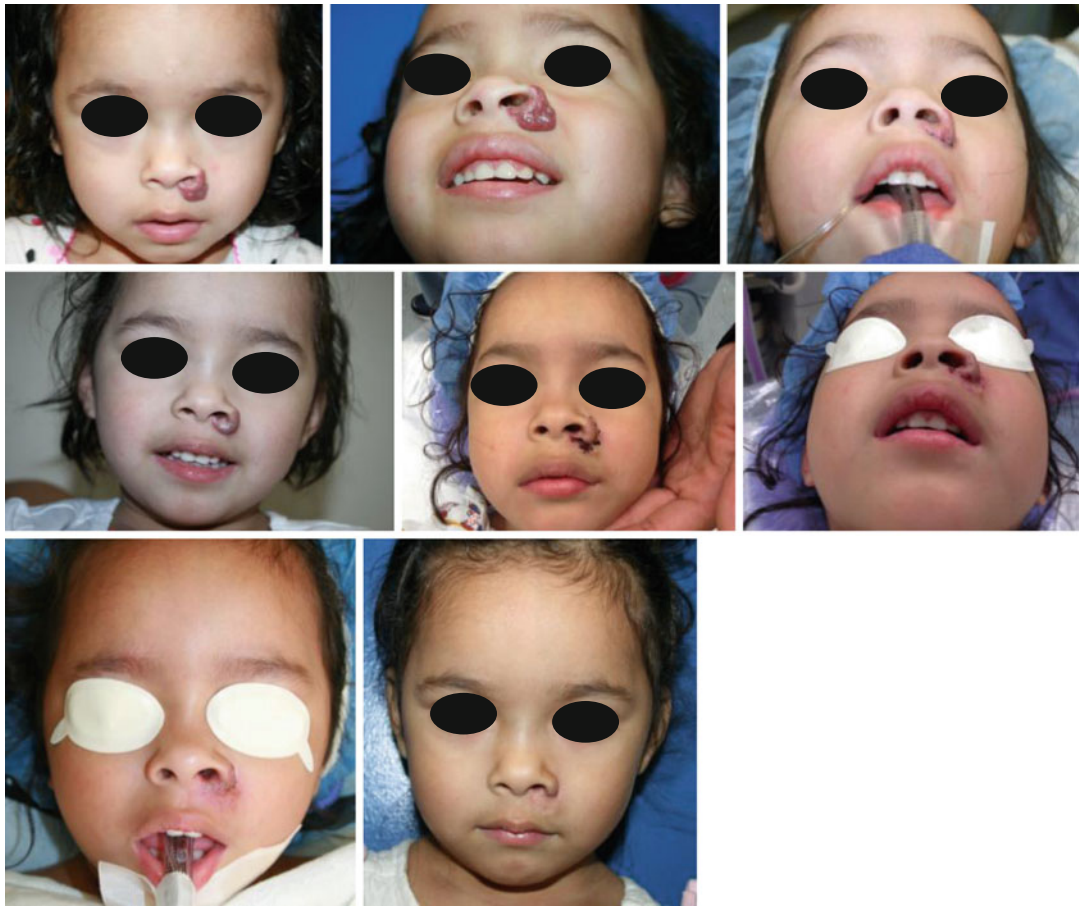

Fig. 16.3 This child is a twin who presented with a hemangioma that involved her left nostril, upper lip, and nasolabial area. The area around the nostril was resected initially. This was followed with laser treatment and a perialar flap which was used to reconstruct her nasal sill. The standing cone that resulted from this was corrected 3 weeks later. This is a difficult area to correct and should be approached in a staged manner

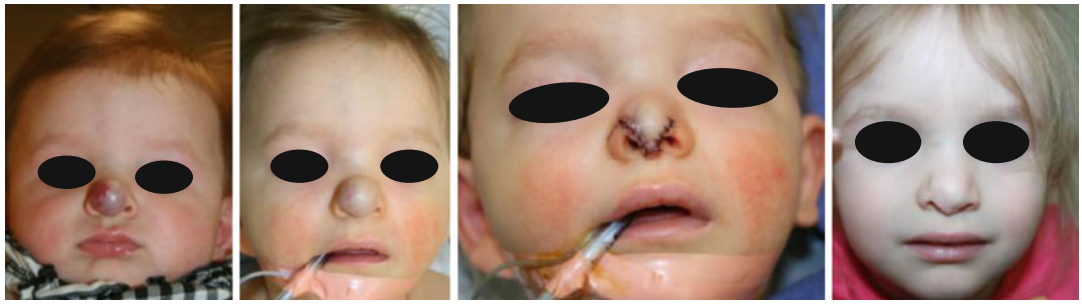

Fig. 16.4 An infant with a focal nasal tip hemangioma. This was treated with propranolol and pulsed dye laser until 10 months of age. The patient then underwent surgical resection to correct the Cyrano nasal deformity. In these cases, the hemangioma originates in the midline, between the lower lateral nasal cartilages. As it proliferates, it displaces the cartilages laterally and rotates them outward. A modified subunit approach [6] allows resection of redundant skin and approximation of the lower lateral cartilages. Even if the hemangioma was left untreated and allowed to involute spontaneously, the distortion of the lower lateral cartilages will leave a permanent nasal tip deformity

Fig. 16.5 A child in whom spontaneous involution resulted in residual fibrofatty tissue and a Cyrano nasal deformity. A modified subunit approach allowed resection of redundant skin and correction of the position of the lower lateral cartilages. The patient is seen several years postoperatively. Normal nasal development has occurred

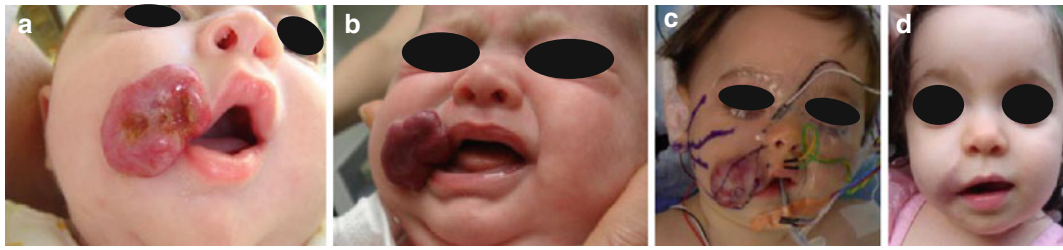

Fig. 16.6 An infant with an ulcerated nasolabial hemangioma (**a**). The child was treated with corticosteroids to treat the ulceration (pre-propranolol era) (**b**). The hemangioma was then excised using an ellipse (**c**). Excision of all of the involved skin would have everted the lateral third of the upper lip. A small ellipse of IH skin was left, but the underlying hemangioma was excised. Facial nerve monitoring was used [7], and all the nerve branches as well as the muscle were preserved. The wound was closed, and several laser treatments including pulsed dye and fractional CO_2 were used in the final stages (**d**)

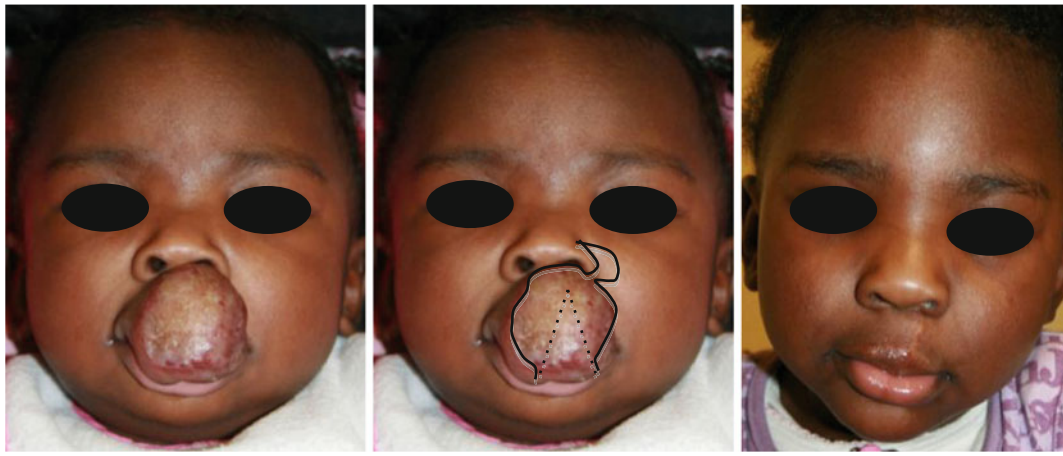

Fig. 16.7 An infant with an upper lip hemangioma. This child had not been previously treated. Surgical excision was undertaken to correct the horizontal and vertical lengthening of the upper lip [8]. A horizontal wedge resection was used to correct the horizontal dimension (the *dotted line* represents the mucosal incisions). Once this was corrected, a second stage was undertaken to develop a vermillion with a cupid's bow. Unfortunately, the patient's scar was not optimal. Concerning lesions of the upper lip, the lip is usually too long in the vertical or the horizontal dimension. The above case demonstrates a lip too long in the horizontal dimension. A lesion that causes lengthening of the vertical dimension is corrected through an incision along the vermilliocutaneous junction. The appropriate height of tissue is removed, and the junction is then reconstituted

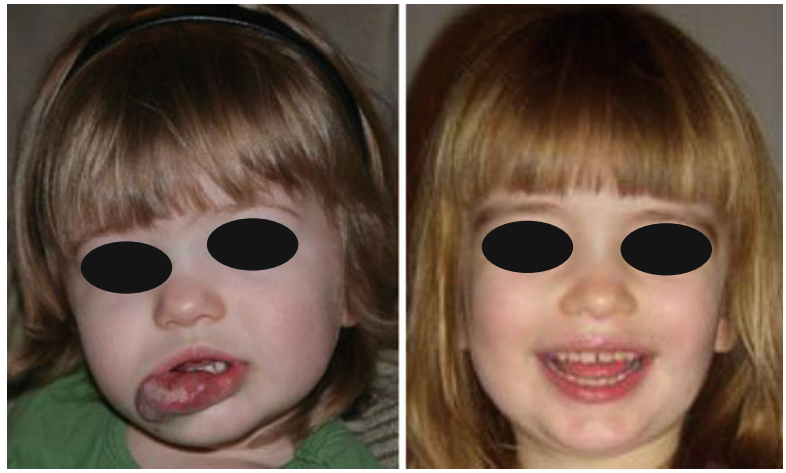

Fig. 16.8 A hemangioma of the lower lip is usually corrected through a wedge resection. In the above case, about 40 % of the lower lip was removed. As the hemangioma proliferates, it almost always stretches the lower lip making removal of a significant length of lower lip without producing a microstomia. The surgeon should use his/her judgment in these cases, but we have removed up to 50 % of the lower lip without causing microstomia

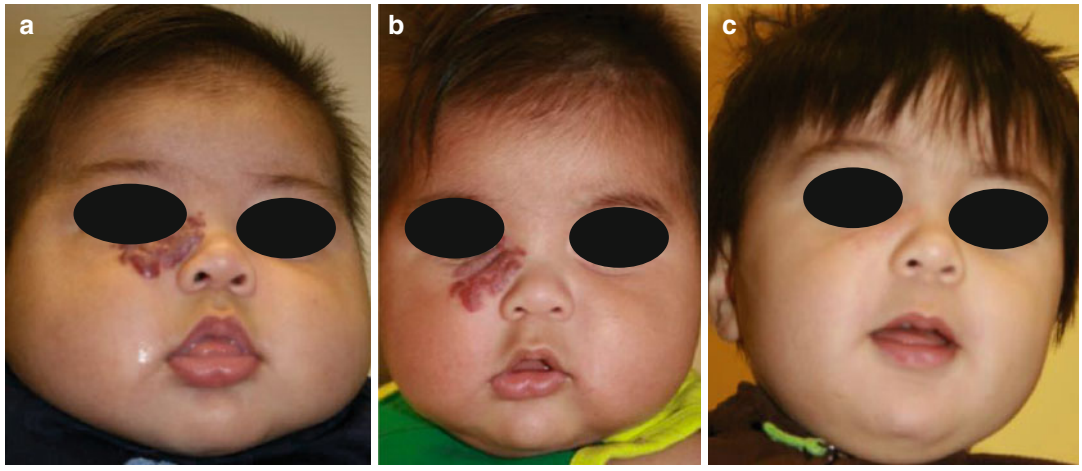

Fig. 16.9 An infant with a right paranasal hemangioma (**a**). The child was treated with propranolol for several months. The lesion shrunk but not completely (**b**). A pulsed dye laser and fractional CO_2 laser completed the treatment (**c**)

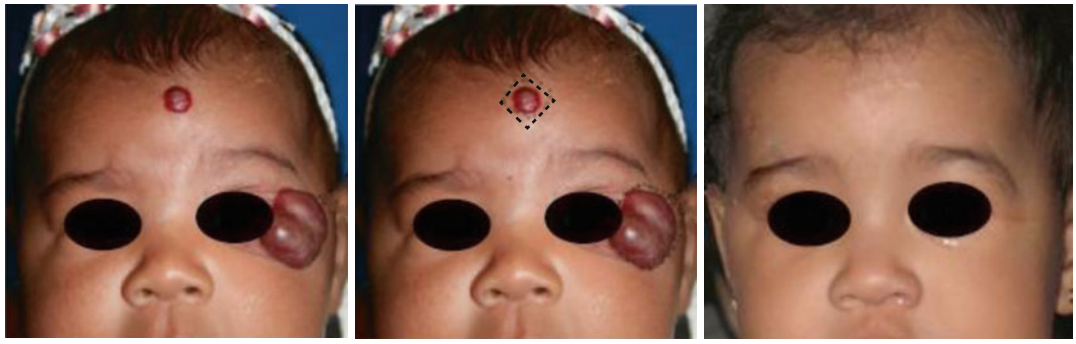

Fig. 16.10 An infant with a lesion involving her left lower eyelid and her forehead. The lower eyelid lesion was pedunculated, and this allowed excision using an ellipse with the long axis following the subciliary line and extending past the lateral canthus to the brow. There was enough skin to allow primary closure without an ectropion (the *dotted line* represents the incision lines). The forehead lesion was excised using an ellipse with its long axis, parallel to the relaxed tension lines of the brow. The most common complication following a lower eyelid excision is an ectropion. This results from insufficient skin for primary closure. In most cases, preoperative planning can prevent this. The child is seen here several months post excision

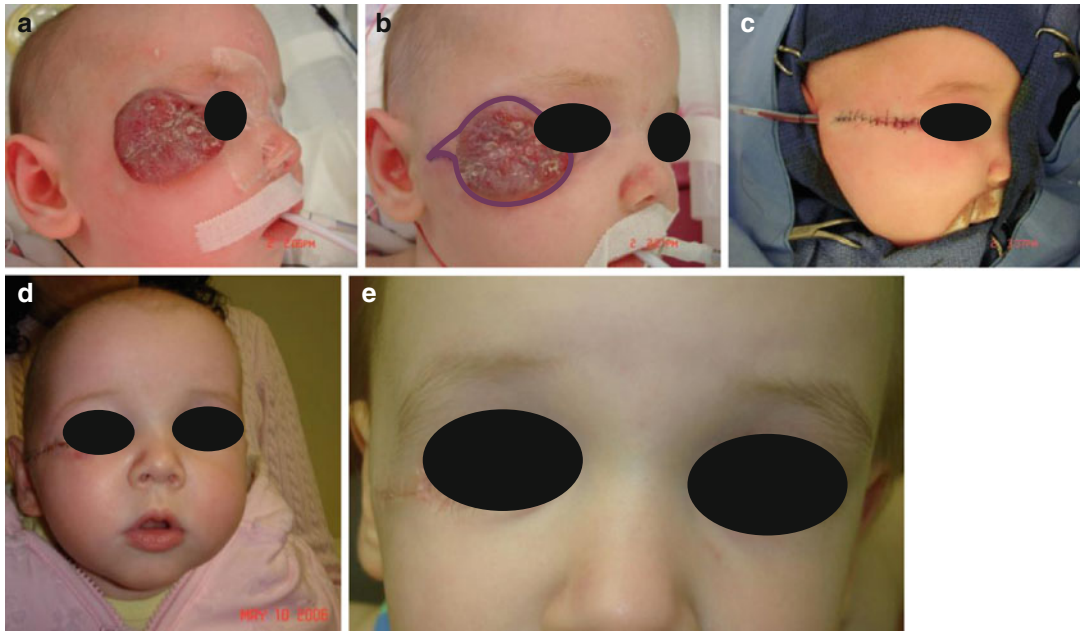

Fig. 16.11 An infant with a right lower eyelid and periorbital ulcerated hemangioma (**a**). The lesion was excised using an ellipse (**b**). Due to the extent of the lesion, primary closure was a challenge. The child is seen immediately post surgery (**c**) and a week later (**d**). Since there was insufficient skin, the child was left with an ectropion which persisted (**e**) 1 year later. This can be repaired with a small skin graft

References

1. Waner M, North PE, Scherer KA, Frieden IJ, Waner A, Mihm MC Jr (2003) The nonrandom distribution of facial hemangiomas. Arch Dermatol 139(7):869–875. Epub 2003/07/23
2. Buckmiller LM, Munson PD, Dyamenahalli U, Dai Y, Richter GT (2010) Propranolol for infantile hemangiomas: early experience at a tertiary vascular anomalies center. Laryngoscope 120(4):676–681. Epub 2010/01/30
3. Leaute-Labreze C, DumasdelaRoque E, Hubiche T, Boralevi F, Thambo JB, Taieb A (2008) Propranolol for severe hemangiomas of infancy. N Engl J Med 358(24):2649–2651. Epub 2008/06/14
4. McMahon P, Oza V, Frieden IJ (2012) Topical timolol for infantile hemangiomas: putting a note of caution in "cautiously optimistic". Pediatr Dermatol 29(1):127–130. Epub 2012/01/20
5. Sherwood KA, Tan OT (1990) Treatment of a capillary hemangioma with the flashlamp pumped-dye laser. J Am Acad Dermatol 22(1):136–137. Epub 1990/01/01
6. Waner M, Kastenbaum J, Scherer K (2008) Hemangiomas of the nose: surgical management using a modified subunit approach. Arch Facial Plast Surg 10(5):329–334. Epub 2008/09/17
7. Ulkatan S, Waner M, Arranz-Arranz B, Weiss I, O TM, Saral M et al (2014) New methodology for facial nerve monitoring in extracranial surgeries of vascular malformations. Clin Neurophysiol 125(4):849–855. Epub 2013/10/22
8. O TM, Scheuermann-Poley C, Tan M, Waner M (2013) Distribution, clinical characteristics, and surgical treatment of lip infantile hemangiomas. JAMA Facial Plast Surg 15(4):292–304. Epub 2013/06/12