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## Prevention and treatment of ecchymosis in non-surgical aesthetic practice



Seriousness of complication		Frequency of complication	
Minor complication	X	Common	X
Worrying complication		Occasional	
Moderate complication		Infrequent	
Serious, but not major		Rare	
Major complication		Very rare	

# Prevention and treatment of ecchymosis in non-surgical aesthetic practice

## Definition

A bruise, also known as a 'contusion' or 'ecchymosis,' is a small haemorrhagic spot that results from extravasation of blood; it is found in the skin or mucous membrane and presents as a non-elevated, rounded or irregular, blue or purplish patch (Dorland Medical Dictionary, 2003).

## Introduction

Cosmetic treatments amounted to £2.3 billion in the UK in 2010 and this amount was estimated to reach £3.6 billion in 2015 with 9 out of 10 of these procedures being non-surgical and generating 75% of the market share<sup>1</sup>. However, downtime following a cosmetic procedure is an important consideration for patients prior to undergoing a treatment. Bruising is often a tell-tale sign that a patient has had something done and can lead to some embarrassment and unsolicited questions<sup>2</sup>. As well as the negative cosmetic effect of a bruise, facial bruising may lead some to assume spousal abuse<sup>3</sup>.

## Incidence

Localised reactions such as bruising are by far the most common adverse event encountered with procedures such as dermal filler or botulinum toxin injections. The incidence is variable and dependent on many factors but one study reports the incidence of bruising following dermal fillers to be between 19 – 24%<sup>4</sup> although another study reports the incidence as high as 68%<sup>5</sup>.

## Minimising the risk

### (a) Patient factors

Many factors can influence the risk of bruising and it is important to take a full medical history prior to undertaking treatment with reference to previous treatments and susceptibility to bruising, haematological and liver disease, coagulopathies and medication including prescribed and over the counter. Older patients with thin and fragile skin and slower repair mechanisms are likely to be more prone to bruising and slower to recover<sup>2</sup>. Alcohol increases clotting time and increases risk of bruising. Patients should avoid alcohol 24 hours prior to treatment<sup>2</sup>. Patients who are malnourished may be in a higher risk group; vitamin C deficiency and iron deficiency increases risk of bruising and prolongs healing time.

### Medication

Many prescribed medications such as aspirin<sup>2</sup>, clopidogril, warfarin, non-Vitamin K dependent oral anticoagulants (including dabigatran, apixaban and rivaroxaban), heparin and the low molecular weight heparins all affect blood clotting and will increase the risk of haemorrhage and bruising. These are often prescribed in atrial fibrillation, thromboembolic disease, mechanical heart valves and in patients with a high risk of or previous cardiovascular or cerebrovascular infarction. These medications should not be stopped without specialist advice and should not be discontinued for an aesthetic

procedure. If aspirin is being taken for another indication such as analgesia, this should be avoided for one week prior to the treatment being performed<sup>6</sup>. Similarly, non-steroidal anti-inflammatory medications<sup>7</sup> such as ibuprofen, naproxen, diclofenac, celecoxib and meloxicam should be avoided for a similar period. Corticosteroids will also increase the risk of bruising as they increase the fragility of capillaries within the skin<sup>2</sup>. If a patient is taking a prescribed medication, the risks and benefits of the procedure should be discussed prior to consent being obtained and if a patient decides to proceed, they should be counselled about the increased risks.

## Herbal and vitamin supplements

Over the counter herbal and vitamin supplements are becoming increasingly common and can have an influence on clotting time and increase the risk of bruising. Fish oils<sup>7,8</sup>, omega-3 fatty acids<sup>9</sup>, garlic<sup>6,7,8,9</sup>, high dose Vitamin E<sup>6,7,8,9</sup>, ginkgo biloba<sup>6,7,8,9</sup> and St. John's wort<sup>8,9</sup> may all lead to greater bruising and the general consensus is that these should be avoided for 2 weeks prior to surgical procedures<sup>10</sup>.

## (b) Practitioner factors

Practitioners should have a good knowledge of venous and arterial vessels of the face to avoid puncturing larger vessels<sup>2</sup>. Careful inspection of the skin with all make-up removed should be done to identify any superficial vessels which can then be avoided<sup>6</sup>. Lighting is important to be able to see underlying vessels and other aids such as a magnifying loop or VeinViewer® Flex<sup>6</sup> may offer a greater advantage. Ensure the treatment room is not too hot which will cause vasodilatation.

Correct positioning of the patient can reduce the risk of bruising by preventing any unnecessary movement and trauma, ideally semi-reclined at 30 degrees with the head supported by a head rest<sup>6</sup>. Also, the practitioner's injecting hand may be braced to the patient to avoid movement<sup>6</sup>.

A fanning or threading technique with a sharp needle into the dermal or immediate subdermal plane is more likely to result in bruising when compared to a single or serial puncture technique<sup>4,11</sup>. Less bruising is observed when using the depot or aliquot technique with product placed at the supra-periosteal level<sup>8</sup>.

Larger gauge needles are more likely to damage blood vessels and lead to bruising<sup>2</sup>. Where possible, smaller gauge needles are preferable<sup>8</sup> but this may be in part be dependent on the product being injected. Administration of botulinum toxin should be via a 30G needle and the use of a 32G needle did not show any statistical difference in the rate of bruising compared with a 30G needle<sup>12</sup>.

There is some evidence that the use of a fanning technique with a blunt ended cannula reduces the incidence of bruising<sup>3,13,14</sup>, although very thin cannulas can still cause considerable trauma. Cannulas are also generally longer than their counterpart needles and therefore less entry points are needed which again minimises the risk of bruising<sup>6,8</sup>.

Increased rate of injection and volume are both linked to greater incidence of bruising<sup>6,8</sup> with treatments performed more slowly and with less volume having better outcomes in terms of local reactions including bruising<sup>1</sup>.

There is some evidence that cooling the skin using a contact cooling device prior to

injection reduces the incidence of ecchymosis by 60-88%<sup>15</sup>.

There are reports in the literature that prophylaxis with *Arnica montana* leads to less bruising following cosmetic surgery which was statistically significant on day 1 and day 7 when compared to a control group<sup>9</sup>.

### **(c) Product factors**

The use of adrenaline (epinephrine) with lidocaine can limit bruising as the adrenaline leads to a vasoconstriction of surrounding vessels and inhibits the activation of eosinophils which play a part in bruising<sup>8</sup>. Adrenaline should be used with caution as it will cause blanching of the skin and may mask the symptoms of an acute vascular occlusion. Hyaluronic acid has innate anti-thrombotic qualities.

### **Areas of caution**

- Periorbital region (particularly the lateral canthus where the skin is thin and veins more superficial<sup>3</sup>)
- Perioral region and oral commissures
- Temporal region

### **Treatment**

As part of an informed consent patients should be prepared for bruising which may in rare cases be difficult to camouflage and may inhibit social activities, particularly those patients in high risk groups. When obtaining consent, use appropriate language for the patient (e.g. black eye). Ecchymosis will usually completely resolve in healthy individuals within 14 days (and in 7 days for half of this group)<sup>20</sup> but it may persist for longer. The application of cold packs within the first 48 hours followed by heat can aid resolution.

Application of local compression following injection reduces bruising risk<sup>2,6</sup> as does the use of a cold compress<sup>2,8</sup> to encourage vasoconstriction<sup>6</sup>.

The topical application of arnica<sup>1,17</sup>, vitamin K<sup>8,17</sup> or bromelain<sup>1,18</sup> can lead to a reduction in the development of a bruise and may also increase the speed of resolution<sup>19,20</sup>. Bromelain is an enzyme derived from pineapple that can be taken at a dose of 200-400mg three times a day to speed healing and help the body clear metabolic waste following an injury<sup>2</sup>.

Persistent bruising or haemosiderin staining because of ecchymosis may be amenable to laser treatment with devices such as the pulsed dye light (VBeam®) or potassium titanyl phosphate (KTP) laser where haemoglobin serves as the chromophore<sup>8</sup>. Patients who develop bruising should be advised to stay out of the sun initially to limit the risk of persistent staining<sup>8</sup> and to use a high factor sun protectant<sup>17</sup>.

Vigorous exercise can increase blood pressure and aggravate any bruising that is developing so should be avoided for the first 24 hours following an aesthetic procedure<sup>2,8</sup>. Patients should also be advised to avoid extremes of heat.

Finally, if unacceptable bruising does develop, camouflage make-up may be applied.

### **Haematoma**

Rather than forming a bruise, if there is a collection of blood beneath the skin or within the muscle, this may become trapped resulting in a firm mass appearing. The blood within the haematoma is initially liquefied and can often be aspirated and

drained if it is dealt with before it becomes completely solid. A haematoma will almost always naturally resolve over several weeks or months as the body breaks it down through normal processes. If a haematoma is very large or is causing damage to surround tissue due to compression, it may be removed surgically. Haematomas rarely occur following non-surgical aesthetic procedures<sup>2</sup>.

## **Refer**

Bruising will normally resolve spontaneously within 10-14 days and is best managed conservatively. However, if bruising is particularly distressing or a

haematoma has developed it is best to review the patient as soon as possible. Keep contemporaneous notes with good documentation and photography. Reassurance is often all that is required or simple measures included in this document.

Haematoma development may need referral to a colleague for aspiration and drainage or surgical excision if it is causing compression to nerves or vessels. Bruising that fails to resolve over time or worsens over time should be referred to their General Practitioner as this may be a sign of an underlying medical condition and should be investigated further.

## References:

1. Review of the Regulation of Cosmetic Interventions. Department of Health, April 2013.
2. Brennan C. Stop “Cruising for a Bruising”: Mitigating Bruising in Aesthetic Medicine. *Plastic Surgical Nursing* 2014; Volume 34(2):75-79.
3. Niamtu J III. Filler injection with micro-cannula instead of needles. *Dermatol Surg.* 2009;35(12):2005–2008.
4. Glogau RG, Kane MAC. Effect of injection techniques on the rate of local adverse events in patients implanted with nonanimal hyaluronic acid gel dermal fillers. *Dermatol Surg.* 2008;34(s1):S105–S109.
5. Tzikas TL. Evaluation of the radiance FN soft tissue filler for facial soft tissue augmentation. *Arch Facial Plast Surg.* 2004;6(4):234–239.
6. Hamman MS, Goldman MP. Minimizing Bruising Following Fillers and Other Cosmetic Injectables. *J Clin Aesthet Dermatol.* 2013;6(8):16–18.
7. Cohen JL. Understanding, Avoiding, and Managing Dermal Filler Complications. *Dermatol Surg* 2008;34:S92–S99.
8. Funt D, Pavicic T. Dermal fillers in aesthetics: an overview of adverse events and treatment approaches. *Clinical, Cosmetic and Investigational Dermatology* 2013;6 295–316.
9. Nettar K, Maas C. Facial Filler and Neurotoxin Complications. *Facial Plast Surg* 2012;28:288–293.
10. Broughton G II, Crosby MA, Coleman J, Rohrich RJ. Use of herbal supplements and vitamins in plastic surgery: a practical review. *Plast Reconstr Surg.* 2007;119(3):48e–66e.
11. Gladstone HB, Cohen JL. Adverse effects when injecting facial fillers. *Semin Cutan Med Surg.* 2007;26(1):34–39.
12. Price KM, Williams ZY, Woodward JA. Needle preference in patients receiving cosmetic botulinum toxin type A. *Dermatol Surg.* 2010;36(1):109–112.
13. Fulton J, Caperton C, Weinkle S, Dewandre L. Filler injections with the blunt-tip microcannula. *J Drugs Dermatol.* 2012;11(9):1098–1103.
14. Zeichner JA, Cohen JL. Use of blunt tipped cannulas for soft tissue fillers. *J Drugs Dermatol.* 2012;11(1):70–72.
15. Nestor MS, Ablon GR, Stillman MA. The use of a contact cooling device to reduce pain and ecchymosis associated with dermal filler injections. *J Clin Aesthet Dermatol.* 2010 Mar;3(3):29-34.
16. Moradi A, Shirazi A, Moradi-Poehler J, Turner J, Howell DJ. A blinded, randomized, split-face pilot study of bruising and pain with hyaluronic acid for correction of perioral lines using no lidocaine, lidocaine alone, and lidocaine and epinephrine. *Aesthet Surg J.* 2015 May;35(4):443-55.
17. Urdiales-Gálvez F, Delgado NE, Figueiredo V, Lajo-Plaza JV, Mira M, Moreno A, Ortíz-Martí F, Del Rio-Reyes R, Romero-Álvarez N, Del Cueto SR, Segurado MA, Rebenaque CV. Treatment of Soft Tissue Filler Complications: Expert Consensus Recommendations. *Aesthetic Plast Surg.* 2018 Apr;42(2):498-510.
18. Weinkle S, Saco M. Approach to the Mature Cosmetic Patient: Aging Gracefully. *J Drugs Dermatol.* 2017 Jun 1;16(6):s84-s86.
19. MacKay D, Miller AL. Nutritional support for wound healing. *Altern Med Rev.* 2003;8(4):359–377.

20. Leu S, Havey J, White LE, et al. Accelerated resolution of laser-induced bruising with topical 20% arnica: a rater-blinded randomized controlled trial. *Br J Dermatol.* 2010;163(3):557–563.

# Prevention and treatment of ecchymosis in non-surgical aesthetic practice

The ACE Group have produced a series of evidence based and peer reviewed guidelines to help practitioners prevent and manage complications that can occur in aesthetic practice. These guidelines are not intended to replace clinical judgement and it is important the practitioner makes the correct diagnosis and works within their scope of competency. Some complications may require prescription medicines to help in their management and if the practitioner is not familiar with the medication, the patient should be appropriately referred. Informing the patient's General Practitioner is considered good medical practice and patient consent should be sought. It may be appropriate to involve the General Practitioner or other Specialist for shared care management when the treating practitioner is not able or lacks experience to manage the complication themselves. Practitioners have a duty of care and are accountable to their professional bodies and must act honestly, ethically and professionally.

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