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Management of acute skin infections in non-surgical aesthetic practice

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

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Definition of infection:

"The invasion and multiplication of microorganisms in body tissues, especially that causing local cellular injury due to competitive metabolism, toxins, intracellular replication or antigen-antibody response."[1]

Introduction:

Acute skin infections can occur following any procedure where the normal integrity of the skin is breached. Typically, this is following an intradermal injection such as when performing dermal fillers, botulinum toxin treatments, micro-needling or sclerotherapy. However, it is also possible with non-penetrating treatments such as chemical damage following skin peels or thermal damage caused by laser or intense pulsed light.

Incidence:

Most experts would agree that infections are quite uncommon[2] or rare following dermal filler treatment with an incidence of between 0.04-0.2%[3]. The risk of infection depends on multiple factors relating to the patient, the practitioner, the procedure, the technique and the amount of skin trauma.

Acute infections tend to occur because of contamination at the time of injection due to lack of or poor disinfection, injections through an infected sebaceous gland, reduced skin immunity or bacteraemia at the time of injection[3].

Signs and symptoms:

An acute skin infection such as cellulitis or erysipelas presents with redness, heat, tenderness and possibly swelling[4]. Infection is initially localised but left untreated it will often spread and blisters or bullae may appear over the infected site. The patient may have systemic symptoms such as fever, malaise, nausea, rigors and sweats. Acute infection has a rapid onset, presenting within 3-7 days of exposure[5].

It is important to properly assess the patient as an early infection may be difficult to differentiate from the initial inflammation caused by the treatment, injection site necrosis and allergic reaction[3].

Delayed onset infections can occur several weeks or even years after initial injections and should be suspected if a red, indurated area presents any time after infection[3].

Minimising the risks:

1. Patient

Prior to any treatment, a full medical history should be taken along with relevant examination of the patient. There are contra-indications for all procedures although any condition which impairs immunity is a risk factor for skin infections. Relative contra-indications include diabetes mellitus, immunosuppression (acquired or drug-induced), obesity, venous insufficiency, oedema or lymphoedema, dental infection or poor oral hygiene and IV drug use. Treatments

should not be carried out in an area with a pre-existing infection[6] or if the patient has a systemic infection.

Medication that may increase the risk of infection due to drug-induced immunosuppression include steroids, chemotherapy agents, anti-rejection drugs and disease modifying drugs, such as methotrexate, azathioprine, leflunomide, ciclosporin, mercaptopurine and mycophenolate[7].

Patients should be informed of the risk of infection as part of consent process and given written aftercare advice to take away on what to look for and what to do if symptoms develop.

2. Practitioner

The practitioner should have knowledge and understanding of infection control and the aetiological factors involved. Infection control training must be in-line with professional standards and their code of conduct as laid out by the regulatory bodies.

3. Environment

The environment should be suitable for carrying out aesthetic treatments and compliant with infection control standards. As a bare minimum it needs to be clean and hygienic with appropriate treatment surfaces and hand washing must be available. The use of sterile packs and drapes are advised where needed. Good infection control protocols need to be adhered to in line with national standards (NICE 2012)[8].

Infections due to *Mycobacterium chelonae* have been reported due to skin contamination from ice made from the clinic's tap water[9] and either a disinfected cooling device or ice wrapped in a sterile bag should be used if required.

4. Product

Use only legitimate products where their source can be identified. Products need to be used within their expiry date or discarded appropriately. Do not administer products from a single syringe to multiple patients, even if the needle or cannula on the syringe is changed. Needles, cannula and syringes are sterile, single-use items. Do not administer products from single-dose syringes or ampoules to multiple patients or combine leftover contents for later use.

Reconstitute using aseptic technique as per manufacturer guidelines and discard any unused product[6]. If multi-dose vials must be used, both the needle or cannula and syringe used to access the multi-dose vial must be sterile and the cap disinfected prior to penetration. Multi dose vials should be discarded within 28 days unless the manufacturer advises otherwise[10].

5. Technique

Ensure good skin preparation; all make-up or other potential contaminants should be removed[6] with facial wash and followed with antiseptic skin preparation of the treatment area such as 2% chlorhexidine and isopropyl alcohol 70%[2] if no history of sensitivity or a hypochlorous solution. Skin disinfection should be undertaken after make-up removal and after any application of ice[11].

Skin disinfectant solution should be applied using gentle friction repeated up and down, back and forth for 30 seconds to reduce the number of resident bacteria present at the insertion site which could

serve as a source of infection[12]. The solution should be allowed to fully air dry.

An aseptic technique, including hand hygiene should be adopted where necessary. Sterile field and gloves are recommended for deep tissue augmentation with dermal fillers.

Ensure the needle or cannula is not contaminated during injection procedures, do not let the needle or cannula touch the skin except during actual injection and do not wipe excess product from the needle tip with gauze, residual amounts can be flicked off[13].

Ensure accurate documentation of your treatment protocol.

6. Aftercare

Patients should be advised to avoid touching the area for 4 hours and to refrain from applying make-up for 12 hours. For patients who are observed to unconsciously and habitually touch their face, it may be appropriate to apply alcohol gel to their hands following treatment.

7. Areas of caution:

Periorbital cellulitis should be considered an emergency as there is a risk of orbital spread and subsequent blindness, consider immediate specialist referral[3].

Prophylaxis treatment:

Although some practitioners prescribe antibiotics prophylactically for certain procedure or in patients considered higher risk (including patients with HIV-related lipoatrophy), there is no evidence for this[14] and it is not recommended by the Aesthetic Complications Expert Group. However, the use of anti-viral medication may be required prophylactically in certain cases (See the Aesthetic Complications Expert Group Herpetic Infections guidelines).

Treatment of acute infection:

As part of the consent process patients should be informed of the risk and symptoms of infection and advised to report to the practitioner for immediate assessment if they develop any erythema, heat, tenderness and swelling that is not settling within the first 48 hours or is worsening. If their practitioner is unobtainable, the patient should be advised to seek the attention of a medical practitioner.

Non-prescribing practitioners should refer immediately to their prescribing aesthetic practitioner for diagnosis and treatment. The General Practitioner should be notified in accordance with professional standards and good medical practice with the consent of the patient.

Medical history should be reviewed with attention to allergy/sensitivity or interactions with concomitant prescribed medicines.

Acute infections are typically due to common pathogens present on the skin such as *Staphylococcus aureus*[15], *Staphylococcus epidermidis*[3], *Propionibacterium acne3*[4] and *Streptococcus pyogenes*[15].

First line treatment is for 7 days, although if treatment response is slow, continue for a further 7 days[5].

First Line Treatment[16]:

Flucloxacillin 500mg QDS PO If Penicillin allergic, Clarithromycin 500mg BD PO

Second Line Treatment[16]:

Consider the addition of Penicillin, Amoxicillin or Co-amoxiclav If Penicllin allergic, Clindamycin 300mg QDS PO

Consult your local formulary for first and second line treatments for acute skin infections as local variations are common. If there is no response at 48-72 hours, a change in antibiotic regime should be considered and swab for microbiology, culture and sensitivity if available.

An international expert consensus group studying the use of antibiotics following aesthetic procedures conducted a MEDLINE literature review and made the following recommendations[15]:

Drug	Dose	Duration
Amoxicillin/ Clavulanic acid	4g/24h	10-15 days
Ciprofloxacin	500mg/8h	3-6 wks
Azithromycin	500mg/24h	3 days
Minocycline	500mg/12h	30 days
Flucloxacillin	500mg/8h	7 days

NB: Cloxacillin has been excluded from this list due to being unavailable un the UK.

However, these doses and durations seem excessive according to microbiology advice in the UK where antibiotic stewardship is taken more seriously, and they are not recommended by the Aesthetic Complications Expert Group without appropriate microbiology advice or if culture and sensitivity dictates otherwise.

If Gram negative bacteria or anaerobes are suspected, use broad spectrum antibiotics and consider specialist local microbiologist advice for resistant infections.

If abscess formation occurs and the infection is fluctuant with systemic symptoms, incision and drainage is necessary[17]. The patient may need to be referred if the practitioner is unable to do this.

Paracetamol and/or ibuprofen may be required for pain management and control of fever. Wound management may also be needed dependent on the skin trauma and careful debridement or dressing care could be required if there has been associated necrosis.

Follow-up:

Having prescribed oral antibiotics, the patient should be reviewed according to clinical need until the infection has resolved. It is suggested that initial follow-up after prescribing antibiotics should be within 48 hours. Photographic documentation should be kept and the practitioner should keep a log of infection rates for audit purposes. Good follow up and support along with a full explanation to the patient should ensure a satisfactory outcome.

References

1. The Free Dictionary, Infection. http://medical-dictionary.thefreedictionary.com/infection
2. Cohen JL. Understanding, Avoiding, and Managing Dermal Filler Complications. Dermatol Surg. 2008;34:S92–S99.
3. Ferneini EM, Beauvais D, Aronin SI. An Overview of Infections Associated With Soft Tissue Facial Fillers: Identification, Prevention, and Treatment. J Oral Maxillofac Surg. 2017 Jan;75(1):160-166.
4. Clinical Resource Efficiency Support Team (CREST). Guidelines on the management of cellulitis in adults. CREST;2005.
5. NHS Choices, Map of Medicine, Cellulitis and erysipelas – Suspected.
6. Ozturk CN, Li Y, Tung R, Parker L, Peck Piliang M, Zins JE. Complications following injection of soft-tissue fillers. Aesthetic Surgery Journal. 33(6):862-877.
7. NICE: BNF, Immune Response, https://bnf.nice.org.uk/treatment-summary/immune-response.html.
8. NICE: Prevention and control of healthcare-associated infections in primary and community care, March 2012.
9. Rodriguez JM, Xie YL, Winthrop KL, et al. Mycobacterium chelonae facial infections following injection of dermal filler. Aesthet Surg J 2013;33:265.
10. Safe Injection Practices Coalition 2009, The Joint Commission Multi-Dose Vials.
11. Toy BR, Frank PJ. Outbreak of mycobacterium abscessus infection after soft tissue augmentation. Dermatol Surg 2003;29:971-3.
12. Royal College of Nurses guidance, Wipe It Out, 2012.
13. Funt D, Pavicic T. Dermal fillers in aesthetics: an overview of adverse events and treatment approaches. Clin, Cosmetic and Investigational Derm 2013;6:295-316.
14. Ferneini EM, Gady J, Nuveen E. Complications associated with facial soft tissue fillers. Am J Cosmet Surg 31:238, 2014.
15. 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.
16. British National Formulary, 2014.
17. Sclafani A, Fagien S. Treatment of injectable soft tissue filler complications. Dermatol Surg 2009;35:1672-1680.

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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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