Faculty of Forensic & Legal Medicine

In conjunction with

The British Association for Forensic Odontology

Management of Injuries Caused by Teeth

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Many injuries do not have an immediately obvious cause. Be alert to the possibility of bite marks if the history or appearance is suggestive i.e. any injury which is curved, oval, circular or shows what could be individual tooth marks.

In such cases it is undoubtedly wise to contact an odontologist as soon as possible. If an odontologist cannot attend immediately it is vital that, in addition to your normal examination and history taking, and prior to any treatment, the following steps are taken:

- Swabbing for DNA/saliva (within 48 hours of incident) prior to any recording or measuring if the bite appears to be on exposed skin. Swabbing is using the double swabbing moist and dry technique. An adjacent area to the bite mark should also be sampled using the same swabbing technique. Skin swabbing, if the affected area has not been washed, may be relevant up to 7 days post assault;
- If the bite is through clothing, note the position of the clothing in relation to the bite prior to any photography. Double swab the area of interest for potential fibre trace evidence. An adjacent area to the bite mark again should be sampled using the same method of swabbing. Note: the forensic scientist would also examine the clothing for the presence of DNA/saliva in this situation;
- Recording and measuring – a full description, drawing and overall dimensions should be noted.

Do not attribute the injury to an adult/child perpetrator on the basis of size. This is unreliable and misleading.

Arrange photography as soon as possible even if an expert photographer is not available. Bite mark analysis depends on the quality of the photographs. Ideally, an odontologist should supervise the photography but if not available, the following points are essential:

Essentials of good bite mark photography

- See *FFLM PICS guidance* and obtain *consent*.
- Take a location view – no scale.
- A colour chart should also be used, which may be combined with the scale.
- Take close-ups preferably using a macro lens of each injury with and without scales, and with and without flash (low side-lighting may be useful).
- A rigid right-angled scale is required but it must not obscure any possible part of the injury. A date written on the scale can be useful.
- The scale **must** be parallel with and in the plane of injury.
- The camera must be directly over the injury and at right angles to it to minimise photographic distortion. Where there are two curves, each one should be photographed at right angles.
- If possible and practicable, and to minimise posture distortion, try to photograph the injury with the anatomical location positioned as it was at the time of alleged biting.
- It is necessary to take several views of a curved surface (e.g. opposing tooth marks on a limb).
- Some bite marks become clearer with time so repeat photography should be considered. The odontologist can advise the photographer.

Treatment of bites

Bites may be either from humans or animals (particularly dogs). 10-30% of dog bites and 9-50% of human bites lead to infection. The risk of infection increases with puncture wounds, hand injuries, full thickness wounds and those involving joints, tendons, ligaments or fractures. Infection may spread beyond the bite leading to a multitude of complications.

Pathogens

A wide range of bacteria may infect human and dog bites. Viral infections may also occur in human bites. Hepatitis B, C, HIV and Herpes Simplex should be considered. Only one case of rabies has occurred in the UK following a bat bite.

Initial management

Encourage wound to bleed unless it is already bleeding Irrigate thoroughly with warm running water.

Refer to hospital emergency department (ED) if wounds:

- Are bleeding heavily and/or cannot be stopped with pressure;
- Involve arteries, nerves, tendons, muscles, hands, face or feet;
- Involve crush injuries.

Secondary management

- Check current tetanus status, hepatitis B immunisation, and for allergies to antibiotics.
- Wound closure is rarely advised in primary care. Advice should be sought.
- If referral to an ED is not possible then only consider closure for fresh bite wounds less than 6 hours old where there are no risk factors for infection.

Antibiotic prophylaxis

- Prophylactic antibiotics should be prescribed for all human and cat bite wounds less than 72 hours old, even if no sign of infection.
- Prescribe for other animal bites involving the hand, foot and face, joints, tendons or suspected fractures or for people who are at increased risk of infection, or who have a prosthetic joint or valve.
- For both prophylaxis and treatment give a 7 day course of antibiotics. First choice is co-amoxiclav.
- For those allergic to penicillin use metronidazole and doxycycline or metronidazole and erythromycin/ clarithromycin.
- For children under 12 years of age who are penicillin allergic seek advice from a microbiologist.
- Treatment for tetanus should also be considered in all cases where the skin is breached.

Viral infections in human bites

- Penetrating wounds involving saliva only may present a risk of hepatitis B.
- Hepatitis C and HIV are only a risk if blood is involved.
- Consultation with a virologist is recommended at the earliest opportunity for management.
- The risk from saliva alone for HIV and hepatitis C is considered very small. When blood is present the risk is taken as being that of a single needlestick exposure.

Useful links and references

1. Clinical Knowledge Summaries and National Institute of Health and Care Excellence (NICE)
cks.nice.org.uk/bites-human-and-animal

2. The Green Book (immunisations)
immunisation-against-infectious-disease-the-green-book

3. British Association of Sexual Health and HIV
UK guideline for the use of HIV Post-Exposure Prophylaxis Following Sexual Exposure, 2015

The BAFO list

BAFO maintains a list of its members who are willing to undertake case work at short notice on its website at *www.bafo.org.uk*

All BAFO members work to an agreed protocol for best practice in bite mark analysis and their charges will be in accordance with an agreed scale of fees. There is also a link to the BAFO website from the Faculty of Forensic and Legal Medicine website: *www.fflm.ac.uk*

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Send any feedback and comments to forensic.medicine@fflm.ac.uk