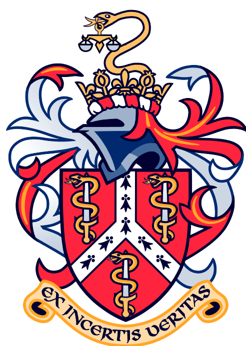
Institute For Addressing Strangulation



Faculty of Forensic & Legal Medicine

Non-fatal strangulation: in physical and sexual assault

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Definitions

Strangulation is the obstruction of blood vessels and/or airway by external pressure to the neck resulting in decreased oxygen (O_2) supply to the brain.

- Non-fatal strangulation (NFS) is when the strangulation does not cause death.
- Fatal strangulation is where death ensues.

Choking, a term often used incorrectly when referring to strangulation, is the mechanical obstruction of the windpipe (trachea), such as a stuck piece of food. (See *Management of Choking in Police Care and Custody*).

Strangulation is different to suffocation as the latter is due to obstruction of the airway at the nose or mouth, above the level of the epiglottis.

Healthcare professionals (HCPs) should be aware that patients may refer to strangulation as *"choking"*, or use other terms, e.g. *"pressure on my neck"*, *"throttling me"* or *"I couldn't breathe"*, so it is important to explore and clarify what is meant, by the patient.

There are four main methods of strangulation[1]:

1. Manual strangulation is used to describe the application of pressure to the neck using the hands.[2]
2. Chokehold or head lock – where the external pressure is applied by an arm around the neck. A choke hold involves an assailant holding their arm across the person's neck from behind, so that pressure is applied by the upper arm and forearm to the vascular structures of the neck. The amount of elbow flexion determines the amount of pressure applied to the neck. This is a known 'martial arts' grappling hold and is variably termed a sleeper hold or vascular/carotid restraint.
3. Ligature e.g. a scarf or belt tightened around the neck.
4. Hanging.

Less common is pressure on the neck from a foot or knee.

All these methods can lead to external pressure on the neck causing partial or complete obstruction of the blood vessels or windpipe (trachea).

Non-fatal strangulation has been described as the domestic abuse 'equivalent of water boarding: both leave few marks immediately afterwards, both can lead to loss of consciousness, both are used to assert the actor's dominance and authority over the life of the other, both create intense fear and potentially result in death, and both can be used repeatedly, often with impunity'.[3]

What may happen in strangulation?

Immediate and significant effects

- Obstruction of the arteries leads to hypoxia
- Obstruction of the veins can lead to increased cerebral blood pressure and 'stagnant hypoxia'
- Obstruction of the trachea causes hypoxia and hypercapnia
- Damage to the spinal column, and in turn to the cord and nerves
- Rarely, a cardiac dysrhythmia due to pressure on the carotid body (node)
- Damage to the intima of the blood vessels leading to thrombus or dissection

NFS can lead to physical and psychological problems. It can result in damage to anatomical structures within the neck, such as the muscles, blood vessels, vocal cords, hyoid bone or thyroid gland.[4] Recovery is variable, it may be complete or lead to long term problems.

The brain is particularly sensitive to decreased oxygen levels. Experiments on healthy adult male volunteers in the 1940s showed that loss of consciousness (LoC) took on average 6.8 seconds.[5] Often these volunteers were dazed and confused afterwards for a short period of time. Some insisted that they had not lost consciousness. With prolonged strangulation, some lost bladder control between 15 to 40 seconds, two lost bowel control at 30 seconds. There was considerable variation in terms of response between the different volunteers.

Pressure required

For ethical reasons it is not possible to conduct experiments in humans to determine how much pressure is required to obstruct the blood vessels and airways in the neck. However, previous studies have shown the following pressures are required (for comparison opening a drink can takes 20psi):

Pressure required to occlude structures in the neck[3]

Jugular vein 4psi

Carotid artery 11psi

Trachea 34psi

(psi = pounds per square inch)

Who experiences NFS?

SafeLives, a UK domestic abuse charity, found that 32% of service users who had an Independent Domestic Violence Advisor (IDVA) reported having experienced strangulation.[6]

A 10 year-review of Living Victims of Strangulation[7], from the USA, where 102 victims were examined, showed:

- 101 were female, age range 17-68 years; average age 31 years
- 81 were assaulted by an intimate partner
- 7 were assaulted by a stranger and 14 by acquaintances, other family members or police
- 81 were assaulted via manual force
- 13 were associated with a sexual assault

In the context of NFS and sexual assault, the complainants overwhelmingly tend to be young adult females. The alleged assailants are usually male with many being the partner or ex-partner of the complainant. In a review of adult NFS cases seen at Saint Mary's SARC, Manchester, by White et al, 197 of 204 complainants were female.[8] The systematic review by Sorensen et al,[3] showed between 3 – 10% of women had experienced NFS by an intimate partner. A study by Glass showed prior NFS was associated with an increased risk of attempted and completed homicide.[9]

Presentation and Clinical Assessment

Consider the medical, psychological, forensic and safeguarding needs of the patient.

Many patients will have thought they were about to die. *Trauma informed practice* should be used.

N.B. In the history, it is important to note how pressure was applied, by whom and if possible, for how long.

History

Details of the history should include what happened at the time of the incident, and afterwards. Clinicians will need to bear in mind that not all symptoms and signs are apparent straightaway, and some individuals may not present immediately, or recollect what happened. Some exploration or clarification of the history may be needed, in order to be sure what is described/meant.

Experience, memory, symptoms	
At the time of the incident	**Since the incident**
• None, (e.g. no awareness of what happened) • Visual disturbance • Auditory disturbance • Faecal and/or urinary incontinence • Loss of consciousness (LoC) • Other	• Respiratory/laryngeal: stridor, dyspnoea, cough or other breathing problems, inability to speak/hoarse voice • Oro-pharyngeal: pain on or difficulty swallowing, dribbling/drooling, oedema/swelling, vomiting • Neurological: seizures, (fits), dizziness, headache, motor impairment/weakness, sensory impairment/symptoms (e.g. visual, auditory, altered sensation), memory loss (without necessarily being aware of LoC) • Gynaecological: ask about any bleeding per vaginum, (PV), in pregnancy, and even if none, seek advice from obstetricians and gynaecologists; refer for assessment, e.g. Doppler checks, ultrasound, if deemed necessary

Clinical Assessment

A structured history should be followed by a comprehensive examination, with consideration given to:

- General observations: pulse, blood pressure, oximetry, respiratory rate, level of consciousness/Glasgow Coma Scale, (GCS)
- Cardio-vascular and respiratory system: including auscultation of carotid vessels for bruits
- Neurological: consciousness, as well as confusion or restlessness, (perhaps indicating hypoxic brain injury), assess for any motor and/or sensory impairment
- Detailed examination of the head, face, eyes, ears and neck (and the structures therein) for signs, as noted above, including, but not limited to, abrasions, bruises, including petechiae, laryngeal pain or abnormal crepitus, subcutaneous emphysema
- Other, as appropriate

Signs

These will depend upon numerous variables including the duration and amount of pressure used and will range from no signs or symptoms, to death. The key to detecting NFS is to have a high level of suspicion and to be proactive in the history taking and examination with regards to signs and symptoms.

In the 204 adults reporting NFS as part of a sexual assault, 86.3% reported having had at least one symptom during the strangulation, and 86.8% reported at least one symptom present at the time of the forensic medical examination.[8]

Bruises and abrasions may be seen on the front and sides of the neck, but the pattern of skin surface injuries may be difficult to interpret because the dynamic nature of an assault and the possibility of the repeated re-application of pressure during strangulation.[1] Clinical assessment may reveal pain on swallowing, hoarseness, noisy breathing (stridor), neck, head or back pain.[1]

As a minimum, the general examination should include:

- the face/mouth/eyes/behind ears: swelling, bleeding, bruising, including petechiae, and/or subconjunctival haemorrhages
- the neck: pain, swelling, bruising, abrasions, (marks from a ligature, if used)
- other as appropriate

Physical examination may reveal[10]

- No injury
- Tenderness
- Transient erythema (reddening) and (oedema) swelling
- Bruising and/or abrasions at the point of compression
- Petechiae (pinpoint, or splinter-like bruises) above the site of the compression, in skin, eyes and mucous membranes e.g. lining of the mouth
- Damage to the larynx, and/or thyroid cartilage, and/or hyoid bone including fracture, which may be frequently under-diagnosed[11]
- Linear abrasions on the neck from the assailant and victim, as the person tries to take the assailant’s hand away
- Damage to the mucosa of the mouth and tongue due to direct pressure on the teeth internally
- Bleeding from mucosa where venous pressure is increased e.g. nose
- Bruits from damage to the carotid vessels

50% of NFS victims will have no visible external injury to their head or neck

As noted, survivors of manual strangulation (or throttling) may have no injuries or only minor injuries such as small curvilinear abrasions on the neck,[12] which may not be noted in the busy environment of an Emergency Department (ED) or general practice.

Moreover, research has confirmed that often symptoms of strangulation are overlooked and there are no visible injuries. In a study of 300 cases 50% of survivors of strangulation had no visible markings to the neck and 25% only minor injuries.[13] Only 48% of 204 adult NFS complainants had an external injury attributable to the NFS despite nearly 70% being examined within 48 hours.[8]

Management

After obtaining the history from and examining the patient, management will depend on numerous factors, including severity of symptoms and time since the incident, as well as local referral protocols. Clinical leads/directors of SARCs and police custody suites should establish effective referral pathways with their nearest ED and/or radiology, ear nose and throat (ENT) departments, as well as the local ambulance service.

Symptoms and signs for which urgent advice from, and/or referral to ED or ENT specialists must be considered, include:

Recent incident (within 36 hours)[14]

- loss of consciousness, and/or concern of hypoxic brain injury
- incontinence (urine and/or faeces)
- unable to/significant pain on swallowing
- unable to breath/stridor/dyspnoea/cyanosis/decreased O_2 saturation
- unable to speak or significant difficulty in speaking
- significant visible bruising to skin and/or significant swelling; sub-cutaneous emphysema of the neck

However, it is important to note that internal injury, including carotid artery dissection can occur despite lack of external injury. Consequently, American guidance has a low threshold for *recommending radiographic imaging*. It is hoped that Intercollegiate guidance for the UK will be available soon.

N.B. Where there is the possibility of current or evolving airway obstruction, the patient should be evaluated in an acute hospital setting. It is possible for oedema of the neck to develop after several hours, which may be life threatening; ED and ENT specialists may opt to keep patients under observation for some hours.

Less recent incident:

- Where a patient has ongoing symptoms or signs, the HCP should seek advice from ED/ENT and appropriate referrals made, as required.

Pregnancy

Whatever the time since the incident, as noted above, advice should be sought from obstetricians.

Forensic medical assessment

Forensic aspects may still be addressed, with appropriate discussion and liaison, even if the patient needs to be referred to hospital. What is done will depend on the history and the time elapsed since the incident, and any activities afterwards e.g. washing.

The assessment/examination should include:

- Careful documentation of positive and negative signs, using a written description and body diagrams/maps
- Consideration of forensic sampling of the neck for DNA trace evidence, if appropriate
- A description of the ligature, if it is found, e.g. at the scene
- Consideration of fingernail swabs, if appropriate, as the assailant's skin may be caught beneath the fingernails
- If a nail is broken, consider cutting it, so it might be matched to the fragment, if found
- If nail extensions are missing, possibly dislodged during the assault, police should be advised in case they are found at the scene
- Consideration of photo-documentation of injuries. The head and neck should be photographed from the front, sides and back, to ensure a complete view. Photography may need to be repeated as injuries evolve. See *PICS Working Group Guidelines on photography*

Aftercare

- Discuss with the patient the signs and symptoms of airway obstruction and how they should seek medical help if concerned. There is a useful list in the RCPA document *Clinical Forensic Assessment and Management of Non-Fatal Strangulation.*
- Communicate clearly to the police involved, as soon as possible, that NFS is part of the allegation. This will help provide context regarding the severity of both the current level of violence alleged but also indicate the potential for future violence and so have an impact on bail and charging decisions.
- In police custody, escalate to the duty inspector, if seen in the context of restraint used in an arrest.
- Consider adult safeguarding: where the alleged assault is in the context of domestic abuse, make sure that a domestic violence risk assessment, (DASH) has been undertaken prior to the person leaving the SARC or police custody suite, along with a referral to a multi-agency risk assessment conference (MARAC) regardless of the final DASH assessment score.
- A child safeguarding referral may also be required, where the patient is a child or for any child who may be at risk, for example in a domestic abuse setting or the alleged assailant has access to children.
- Check where the patient is going, when they leave – is it a safe place? Discuss the possible risks, should they plan to return to the alleged assailant.

The law

In England and Wales, the law in relation to strangulation has recently changed.

Section 70 Domestic Abuse Act 2021 (DA Act 2021) introduced the *Offences of non-fatal strangulation and non-fatal suffocation*. Applying any form of pressure to the neck whether gently or with some force could obstruct or compress the airways or blood flow. Strangulation does not require a particular level of pressure or force within its ordinary meaning, and it does not require any injury.

Suffocation is any act that affects a person's ability to breathe through the application of unlawful force, for example suffocation with a pillow, holding a person down in the bath, or the use of body weight on a person which restricts their breathing.

It is important to ensure that the police are made aware of the significance of NFS, and such information is also included in any statement or report.

Where NFS occurs in the context of an intimate relationship, consideration should be given as to whether the section 76 of the *Serious Crime Act, 2015*, coercive and controlling behaviour, is relevant.

Detailed guidance on the law and its application by the Crown Prosecution Service can be found at: *https://www.cps.gov.uk/legal-guidance/non-fatal-strangulation-or-non-fatal-suffocation*

It is important to appreciate:

- Often there are no witnesses; cases can proceed primarily on the account of the complainant
- Case-building should include detailed information from complainants on their experiences during the assault and medical impacts, including psychological impacts
- A Victim Personal Statement is important
- Lack of visible injury should not undermine a decision to prosecute
- It is important to explore non-visible injuries
- Prosecutors should charge NFS rather than common assault or ABH

Consent

Section 71 DA Act 2021 establishes that there can be no defence in law that the victim consented for the purpose of sexual gratification, where the victim suffers serious harm, where the suspect either intended to cause serious harm, or was reckless as to whether the victim would suffer serious harm, regardless of whether the victim purported to give their consent to the acts that caused the serious harm.

"Serious harm" is defined as grievous bodily harm (GBH) or wounding under s.18 Offences Against the Person Act 1861 (OAP), or actual bodily harm (ABH) under s.47 OAP.

A GBH or wounding is easily identified, but identifying the threshold for ABH can be complex.

The Crown Prosecution Service provides the following guidance on the difference between ABH and the lesser offence of common assault/battery:

- ABH requires bodily harm that "must be more than transient and trifling"
- Unless there are aggravating features, ABH requires injuries that are **more serious** than the following:
  - Grazes
  - Scratches
  - Abrasions
  - Minor bruising
  - Swellings
  - Reddening of the skin
  - Superficial cuts
- ABH may be appropriate where aggravating features are present, even if the level of injury does not meet the ABH threshold, examples of aggravating features:
  - repeated threats or assaults on the same victim
  - there has been punching, kicking or head-butting
  - a weapon has been used
  - the victim is vulnerable or intimidated – see sections *16(2)* and *17(2)Youth Justice and Criminal Evidence Act 1999*. This may include: a pattern of similar offending against the victim, either in the past or in a number of offences to be charged; relevant previous convictions; whether the victim would likely be the beneficiary of *Special Measures*.

See *Common assault or ABH: Decision on charge* within the CPS guidance on OAP.

Custody and NFS

The HCP working in police custody must be alert to NFS injuries in the detainee. These may arise from:

- A domestic violence incident
- An altercation prior to arrest with a third party where a 'choke hold' was used
- Injuries due to restraint

The police are permitted to use 'reasonable force' to arrest someone.[15] What is 'reasonable' depends on the circumstances. Use of 'choke holds' is not generally a permitted police restraint technique.

The HCP must assess the detainee objectively, documenting and interpreting any injuries and raise concerns, if identified. (See *The Role of the Healthcare Professional*).

We are grateful to the Centre for Women's Justice for input to this document.

Useful links

Strangulation Training Institute

Centre for Women's Justice

Symptoms and Signs:

Adult: *Signs and Symptoms of Strangulation*

Paediatric: *Signs and Symptoms of Strangulation*

Medical and Radiographic Evaluation:

Recommendations for the Medical/Radiographic Evaluation of Acute Adult Non/Near Fatal Strangulation (familyjusticecenter.org)

Discharge information:

Strangulation and/or Suffocation Discharge Information

The Royal College of Pathologists of Australasia
Clinical Forensic Assessment and Management of Non-Fatal Strangulation

Institute for Addressing Strangulation (IFAS)

In partnership with the domestic abuse charity SafeLives and Bangor University, the FFLM has, in October 2022, established a new Institute for Addressing Strangulation. See here: *https://www.ifas.org.uk*

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