



Practice Perspectives

Head-to-Toe Exam for SANEs: Red Flags of Serious Injuries

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Abstract

In busy emergency departments (EDs), sexual assault nurse examiners (SANEs) are often the first medical providers who examine patients after a sexual assault, and throughout the evaluation the SANEs are provided with a high degree of autonomy. While most experienced emergency room nurses can very efficiently make a “sick or not sick” evaluation of a patient, less-experienced nurses may have more difficulty. Additionally, many practicing SANEs do not have an ED background. Although most sexual-assault patients have only minor physical injuries that do not require urgent intervention, there are some physical signs that warrant further evaluation. This review summarizes potentially serious findings that, with appropriate training, can be observed during a head-to-toe exam. It primarily concentrates on the general physical exam supplemented by aspects of the genital exam and observations regarding the patient’s mental health.

Keywords: injuries, physical examination, sexual assault, SANE

Head-to-Toe Exam for SANEs: Red Flags of Serious Injuries

Sexual assault nurse examiners (SANEs), the largest subgroup of forensic nurses, are registered nurses who receive additional education and training in the care of sexual assault (SA) survivors. SANEs are often the first provider to evaluate the survivor, especially in busy emergency departments (EDs). Ideally, all patients should receive medical screening by a licensed medical provider, usually a physician, or, depending on institutional protocols, an advanced practice provider (APP) such as nurse practitioner or physician assistant. However, depending on

the staffing and acuity in the department, the timing of the detailed exam may not precede the exam by a forensic nurse. The initial screening may also be limited, especially in a stable-appearing patient, due to concerns about touching the patient or removing clothing prior to evidence collection. Not all medical forensic exams are done in EDs, and many forensic nurses may not have had ED experience. Therefore, it is important that the nursing provider can recognize emergent or life-threatening injuries and properly escalate patient care. This knowledge is applicable to a broader population than sexual assault survivors, such as survivors of intimate partner violence, child abuse, and elder abuse. However, this review focuses on the examination structure most relevant to the evaluation of SA patients.

Published works describing injury prevalence in sexual assault patients lacks standardization in describing and categorizing injuries, making it difficult to draw generalized conclusions. The inconsistency in terminology limits the ability to identify patterns of injury with sexual assault. There have been attempts to standardize the descriptions, but so far they have not been consistently reflected in literature.

Studies have shown that the prevalence of traumatic injuries in SA patients who present to the ED varies widely (Alempijevic et al., 2007; Maguire et al., 2009; McCormack et al., 2022; Sugar et al., 2004). Physical injuries tend to be mild with major/severe injuries infrequently seen. One study found that out of 157 SA survivors 13 years of age or older included in the study, 36.3% had traumatic injuries, out of which 7.6% were classified as a major trauma (McCormack et al., 2022). Another study of 113 patients demonstrated that 44% of victims had light injuries, 18% moderate, and only one person (0.9%) had severe injuries (Alempijevic et al., 2007). Factors predisposing to bodily injuries were the use of alcohol and outdoor location of the assault (Maguire et al., 2009).

Examination of the genitals also has the potential for discovering a rare injury that requires repair in the operating room or has risk for a significant infection (Cybulska, 2013). Due to different definitions and classifications of genital injuries, it is also difficult to quantify the prevalence of genital injury. However, injuries are mostly minor and include bruising, lacerations, abrasions, tears, and tenderness (Kane et al., 2023; McNair & Boisvert, 2021; Ouellette et al., 2022; Sawyer Sommers, 2007). One of the reviews described that 41% of injuries included redness, 15% abrasions, 14% tears/lacerations, and 4% bruises (McNair & Boisvert, 2021). A comprehensive literature review found a wide range of genital injuries (50-90%) in SA survivors, which varied depending on time since the assault and examination techniques used (Sawyer Sommers, 2007). The most common location of injuries was the posterior fourchette (70% of patients with genital injuries) followed by labia minora, hymen, and fossa navicularis (53%, 29%, and 25%, respectively).

This review will also discuss red flags that should warrant a psychiatric evaluation of these patient populations. There are studies suggesting that pre-existing mental illness puts patients at higher risk of being sexually assaulted (Brown et al., 2013; Krahé & Berger, 2017; Manning et al., 2019; Miles et al., 2022). One of these studies found that 46.7% of survivors included in the study reported a pre-existing mental illness (Miles et al., 2022). Patients with pre-existing mental illness were also found to be assaulted more often by acquaintances, and their assaults were more violent and resulted in more injuries, both physical and anogenital. Some of the most common pre-existing mental health problems include anxiety (61%), depression (59%), and bipolar spectrum (33%) (Brown et al., 2013). These vulnerable patients are also at a higher risk of post-assault worsening of their preexisting mental health condition (Cybulska, 2013;

Dworkin et al., 2017; Mason & Lodrick, 2013; Nicholas et al., 2022). A large meta-analysis was performed that concluded that SA carries a subsequent risk of not only PTSD and suicidality, but also exacerbation of other psychopathologies—for example, bipolar disorder and obsessive-compulsive disorder (Dworkin et al., 2017). Suicidality was also increased in male SA survivors (Nicholas et al., 2022). Since SANEs are the providers who will spend the most time with the patient, they should be able to recognize signs that would warrant further psychiatric evaluation.

This review concentrates on “red flags”—injuries that are significant and should not be missed. Due to space constraints, topics routinely covered during SANE training and included in standard protocols such as sexually transmitted illness prevention and treatment, documentation of minor wounds, and detailed post-strangulation evaluation, although important, are outside the scope of this review.

General Principles of the Physical Exam

Head-to-toe exams are a part of SANE assessments and are described in the teaching guidelines (*International Association of Forensic Nurses - Research.Educate.Lead*, n.d.). Medical teaching identifies several parts of the physical exam—namely, observation, palpation, percussion, and auscultation (Walker, Kenneth, Hall, W. Dallas, 1990). Skin exposure is necessary for a full evaluation, but the patient should be provided with the maximal privacy and coverage possible. Some observed injuries may require intervention. For example, deep, irregular, heavily bleeding lacerations may need repair. After collecting evidence, if indicated, palpation allows for further evaluation of observed abnormalities such as skin discoloration, abrasions, hematomas/contusions, or deformities to identify injuries that may need imaging. Palpation is also useful with areas that appear normal, but per history carry the risk of injury that may only be identified through tenderness on exam and may require additional work-up. Additional techniques such as percussion and auscultation may be useful during abdominal and lung exams to evaluate for bowel sounds, fluid collection, or lung injury or consolidation. With unilateral injuries, examiners may find it helpful to compare pertinent exam findings to the contralateral side of the body to assess for differences and whether further evaluation is necessary. Appendix A contains a table of common physical findings and subjective symptoms, in association with the suspected underlying injury.

Head, Eyes, Ears, Nose, and Throat (HEENT) Injuries

Ear examination should include evaluation of the tympanic membrane and contours of the auricular (ear) cartilage if the forensic nurse has been trained and is comfortable with performing the exam. The retroauricular/mastoid region (the area behind the ear) should be evaluated for associated signs of injury. Swelling and tenderness of the ear may indicate the presence of an **auricular hematoma**. These require drainage as persistent hematomas can cause cartilage destruction and a permanent ear deformity, commonly referred to as “cauliflower ear”.

Hemotympanum (blood behind the tympanic membrane) or bloody drainage should prompt concern for intracranial bleed and skull fracture.

Retroauricular/mastoid ecchymosis, also known as **Battle’s sign**, can be suggestive of a basilar skull fracture *particularly in the setting of blunt head trauma*. This physical exam finding occurs one to three days after fracture and most commonly involves the temporal bone (Becker et al., 2024). Nausea/vomiting, clear rhinorrhea/otorrhea, or hemotympanum may also be seen. Periorbital ecchymosis, also known as “raccoon eyes”, can also be seen with **basilar skull fractures**. It also appears one to three days after injury, and if present bilaterally, is highly

predictive of a basilar skull fracture (Leslie Simon & Newton, 2023). Additional imaging (usually CT scan without contrast) should be pursued if clinical suspicion is high, with emergent neurosurgical consultation if the basilar skull fracture is confirmed.

Ocular examination should include evaluation of extraocular movements, visual acuity, and pupillary light reflexes. All eyelid lacerations and globe deformities need to be evaluated by a physician, and may need an ophthalmology consult, due to concerns for tear-duct injuries and globe rupture. Eyelid lacerations may involve the tear ducts of the eye and, if not properly diagnosed and treated, can lead to poor drainage and increased risk of eye infections that could progress to loss of vision. Complex lacerations involving the lid margin or tear duct and full thickness lacerations may need repair in the operating room. Globe ruptures are also extremely important to be diagnosed and treated promptly to preserve the integrity of the eye and maximize chances of preserving vision. Deformity or depression of the globe, or leakage of fluid, should prompt concern for possible rupture. Abnormal eye movements, such as **vertical nystagmus**, which involves a rhythmic pattern of eye movements darting upward/downward, may suggest a concussion or traumatic brain injury (TBI). Of note, vertical nystagmus can also be caused by using the street drug phencyclidine (PCP) (Tintinalli, Judith E, 2019). If a patient is unable to look in a specific direction after trauma to the face, there should be concern for extraocular muscle entrapment which can be caused by an orbital fracture. This can be further evaluated with an urgent CT of facial bones without contrast. **Anisocoria**, or a difference in pupil size between eyes, can be a sign of damage to the eye, carotid artery, or an intracranial injury. **Exophthalmos** (eye protruding out of the orbit) should prompt concern for **retrobulbar hematoma**, especially if the patient is experiencing decreased visual acuity. This is an emergency because of the risk of vision loss. Patients may need an emergency procedure to relieve the pressure (lateral canthotomy). These patients usually experience other symptoms such as severe pain, nausea/vomiting, difficulty opening eyes, periorbital ecchymosis, eyelid hematoma, or vision loss. If there is a suspicion for retrobulbar hematoma, no extra pressure should be applied to the eye such as with palpation or instrumentation. Finally, the presence of subconjunctival hemorrhages or petechiae on the lids or face should ignite concern for strangulation and prompt further investigation.

Oral examination should assess for intraoral lacerations, frenulum injury, petechiae, injury to the palate, tooth fracture/avulsion, and mandible dislocation/fractures. Tooth injuries include **fractures**, **subluxations**, or **avulsions**. Fractures should be urgently followed up with a dentist. In case of dentin or pulp exposure (the tooth fracture has yellow or reddish color, respectively; it may also bleed with pulp exposure), calcium hydroxide should be applied to temporarily seal the fracture. Tooth subluxation is a partial displacement of a tooth that requires repositioning, splinting, and urgent dental follow up. Completely avulsed teeth should be handled only by the crown due to the presence of periodontal ligament on the root, which helps adhere the tooth root to alveolar bone. Place avulsed teeth in Hank's Balanced Salt Solution or oral rehydration solution (such as Pedialyte) as soon as possible to best preserve viability for up to 12–24 hours (Ashkenazi et al., 2001). Milk or saline may also be used, though with decreased viability of the tooth. Avulsed teeth should ideally be reimplanted and splinted within 30 minutes for the greatest chance of success. Teeth that have been out and dry for greater than two hours have a poor replantation prognosis with 95% chance of external root resorption, or immune system destruction of the tooth root (Andreasen, 1981). Urgent followup with a dentist is recommended. Malocclusion, or abnormal alignment of the upper and lower teeth, may be suggestive of a tooth injury or **mandibular fracture**. There may be decreased range of motion (ROM), bony point

tenderness, or a positive bite test. A bite test is performed with the patient holding a wooden tongue depressor between their molars on the affected side while the examiner attempts to twist the depressor in order to break it. If the depressor is broken, the likelihood of a mandibular fracture is very low (Caputo et al., 2013). Inability to close the mouth may indicate mandibular dislocation requiring reduction.

Neck Injuries

Evaluation for strangulation is an important part of the examination of a survivor of sexual assault and/or intimate partner violence. The occurrence of non-fatal strangulation has been estimated to be present in 12–40% of sexual assaults depending on the reporting methods and population studied (Mcquown et al., 2016; Parekh et al., 2024; Zilkens et al., 2016). There are several mechanisms leading to injury from strangulation: hypoxia, increased intracranial pressure, damage to neck structures (such as cervical spine, larynx, laryngeal nerve, and soft tissues), vascular injuries (both venous and arterial), and potentially, stimulation of a carotid body causing arrhythmias (*International Association of Forensic Nurses - Research.Educate.Lead*, n.d.; *Training Institute on Strangulation Prevention*, n.d.). Since some patients may not recall being strangled, all providers assessing the patient need to have a high degree of suspicion and perform a thorough evaluation of the neck to look for tenderness and injuries. The eyes, face, scalp, ears, and oral cavity should also be evaluated to look for petechiae and subconjunctival hemorrhages.

Other important aspects of a neck evaluation are assessment of the airway and cervical spine. Concerns about injury to either one should trigger emergent medical evaluation and possible imaging. The airway should also be assessed for patency, ability to talk and swallow, and for any evidence of compromise including drooling, tripod positioning, voice hoarseness, or stridor. Each bone in the cervical spine should be palpated for any midline tenderness or step-offs (severe misalignment of vertebrae). Distinct bony tenderness should prompt concern for vertebral fracture and the patient should then be placed in a C-collar, as a precautionary measure, until further imaging can be obtained. If there is no tenderness upon palpation, the neck should be examined through its full range of motion, including flexion/extension and lateral flexion. Any neurologic deficits would also indicate the need for C-collar stabilization and advanced imaging (Tintinalli, Judith E, 2019).

Thoracic Injuries

Rib fractures are one of the most common injuries in blunt chest trauma (Dogrul et al., 2020). Other injuries include sternal fractures, most commonly in the body of the sternum. Patients may complain of chest wall pain or dyspnea. Bony point tenderness, crepitus, ecchymosis, or soft tissue swelling may also be noted on exam. Unequal or decreased lung sounds should increase suspicion for **hemothorax** (blood in the pleural cavity) or **pneumothorax** (air in the pleural cavity), which may require needle decompression or placement of a pigtail/chest tube. Most rib fractures can be managed conservatively. Pain may limit depth of inspiration and increase risk of developing pneumonia, particularly for elderly patients or those with underlying pulmonary disease (Chauny et al., 2012). It is important to provide adequate pain management and to avoid circumferential wraps/braces. Segmental fractures of three or more consecutive ribs are referred to as **“flail chest”**. Flail chest can present with paradoxical breathing, where the fractured region is depressed during inhalation and elevated during exhalation. It is associated with respiratory failure secondary to pulmonary contusion and may require intubation and/or surgical fixation. Thoracic trauma should also prompt evaluation of the patient’s spine with accompanying neurological exam. Bony point tenderness or deformities like step-offs may

indicate further imaging, especially if associated with neurological deficits such as weakness or urinary/bowel incontinence. If there is concern for spinal cord injury or spinal cord compression, rectal tone should be tested with a digital rectal exam done by a physician or APP.

Abdominal Injuries

As mentioned with the discussion of Battle sign or raccoon eyes, sometimes a bruise is not just a bruise. When it comes to abdominal exams, there are two ecchymotic distributions that should heighten concern for more significant injuries. Flank ecchymosis and periumbilical ecchymosis are findings concerning for possible **retroperitoneal hemorrhage** (bleeding into retroperitoneal space). These bruises are referred to as **Grey Turner sign** and **Cullen sign**, respectively. Both take around one to two days to develop after injury (Barlotta et al., 2021). Of note, Cullen sign also may represent **intraperitoneal hemorrhage**. Retroperitoneal hemorrhages can be life threatening for several reasons. They are usually not diagnosed with bedside ultrasound (or FAST exam) due to difficulty visualizing the retroperitoneal space. Also, the retroperitoneal space can accumulate up to four liters of blood before tamponade occurs, increasing risk of shock and death (Wheless et al., 2016). Pelvic and spinal fractures are some injuries that may cause retroperitoneal bleeding, though this can occur with injuries to any retroperitoneal organ such as the pancreas and kidneys. Patients may complain of abdominal, flank, or low back pain.

Abdominal palpation should assess for tenderness, including **guarding** and **rebound**. Both are signs of an acute abdomen, which warrants additional imaging. Guarding refers to contraction of abdominal wall muscles during palpation. It can be voluntary or involuntary. Voluntary guarding tends to be generalized with patients contracting their abdominal wall muscles in anticipation of pain from palpation. Involuntary guarding involves abdominal muscle tightening secondary to peritoneal inflammation. It is often localized to a quadrant and may also be termed “rigidity”. Distracting the patient via conversation can help to distinguish the two as voluntary guarding will likely improve with distraction. Rebound tenderness is another finding suggestive of an acute abdomen. It occurs when there is abrupt pain with sudden release of compression during deep palpation. Palpation should be held for a couple seconds prior to release and assessment for pain. Rebound tenderness is therefore defined as more pain with the release of compression than with palpation itself. If there is guarding or rebound tenderness on exam, additional imaging should be considered to rule out intraperitoneal hemorrhage, liver/spleen laceration, or perforated viscus such as a CT of abdomen and pelvis or CT angiogram.

Extremity Injuries

A thorough musculoskeletal exam involves examining each joint throughout its entire range of motion to evaluate for deformities and assess for pulses, nerve distributions, and perfusion. Palpation should include assessment for bony point tenderness, but also compression along the extremity itself, which should reveal soft compartments. Tense or firm compartments should raise suspicion for **compartment syndrome**, a surgical emergency that arises when swelling causes increased pressure within a fascial compartment leading to compromise of the vascular and nervous systems. Another early sign, and the most sensitive, of compartment syndrome is pain with stretching of the involved muscles (Tintinalli, Judith E, 2019). Compartment syndrome is most common in the forearm and lower legs (Via et al., 2015). If a patient has a gross deformity, significant swelling, tenderness, decreased range of motion, or other findings concerning for an **acute fracture**, it is important to ensure pulses and sensation are intact in the involved extremities. Absence of pulses indicates a need for emergent reduction of

the suspected fracture to attempt to regain perfusion to the extremity. Any violation of the skin barrier associated with a fracture is classified as an open fracture and should include treatment with prophylactic antibiotics and evaluation of tetanus status.

Genital Injuries

As mentioned before, most genital injuries if present after SA are minor. SANEs should be aware of lacerations that may need repair, either at the bedside, or in the operating room. There is no specific classification of traumatic genital lacerations, but many reports in sexual assault literature use the obstetric classification, as described in Table 1 (Cunningham, Leveno, Bloom, et.al., 2018). All deeper lacerations should be evaluated by a physician or an APP. This classification is helpful in establishing the further care necessary for the patient. Deep vaginal lacerations have the potential to bleed significantly. These lacerations are rare but have been reported in both SA and consensual intercourse, and sometimes lead to a vaginal vault rupture, which is more common in postmenopausal women with vaginal atrophy and in patients who have had a hysterectomy (Benrubi, 2018). The term vaginal fornix refers to the area between the cervix and the vaginal wall. Deep lacerations of the vaginal wall are most commonly located in the posterior and lateral fornix (Benrubi, 2018). In addition to lacerations, there are reported cases of evisceration of abdominal contents (Abraham et al., 2016; Frioux et al., 2011; Gujar et al., 2011; Preuss et al., 2022). Oral-genital sex, when the recipient is female, can result in some rare but possible complications: pneumoperitoneum and air embolism (Benrubi, 2018). Pneumoperitoneum can present with abdominal pain that can radiate to the shoulder. Peritoneal signs may be absent. These patients would warrant surgical consultation but are most often managed conservatively. Though a report described seven fatal cases of air embolism that occurred in pregnant women at least 20 weeks of gestation (Elam AL, Ray VG., 1986), it is not clear if this complication occurs in non-pregnant women. *Vulvar/labial hematoma* may be a complication of blunt injury, or, less frequently, human bite (Benrubi, Guy I, 2018). Such hematomas can be very painful and may need surgical intervention or drainage. Depending on the mechanism, there may be increased risk of infection from bite wounds or other penetrating wounds. In many cases, conservative treatment including bedrest, analgesia, and ice packs may be sufficient, but pain and swelling may be too significant for voluntary voiding and patients may require a Foley catheter.

Table 1.

Obstetric Classification of Lacerations and Interventions (Cunningham, Leveno, Bloom et.al., 2018).

Degree of Laceration	Description	Intervention
First	Fourchette, perineal skin, vaginal mucosa	Depending on the depth, bedside repair
Second	Fascia and muscle of the perineal body, but not anal sphincter	Often bedside repair sufficient
Third	External anal sphincter	Operating room
Fourth	Through rectal mucosa, disruption of both internal and external anal sphincter	Operating room

The presence of genital lesions should trigger an evaluation by a physician or an APP. Genital lesions may indicate a sexually transmitted illness such as herpes, syphilis, chlamydia, or chancroid, or may indicate a non-infectious condition such as cancer, Behcet disease, lupus or allergic reaction. If present, it is important for the patient to have a more thorough evaluation with appropriate follow up.

Treatment decisions regarding anal injuries in all gender patients would be similar to the treatment of perineal injuries in a female as described in Table 1. Any injuries involving either the internal or external anal sphincter should be evaluated by a surgeon. Superficial injuries may be suitable for bedside repair or may heal spontaneously (Herzig, 2012). Forensic nurses should have a low threshold for consulting a physician or an APP for injuries other than minor abrasions.

There are no published reports of significant penile injuries due to sexual assault. There are multiple case reports of **penile fractures** during sexual activities; cases reviewed were during consensual intercourse. Physical exams in such conditions demonstrate a tender and swollen penis, often with purpuric discoloration, and would necessitate evaluation for urinary retention and urgent urological consultation (Imran et al., 2023; Kajerero et al., 2023; Nandana & Putra Nugraha, 2023; Ngowi et al., 2023; Yogi et al., 2022).

Psychiatric Evaluation

Patients exposed to traumatic events may suffer from acute stress disorder and potentially post-traumatic stress disorder (Bryant, 2017, 2018; Thakur et al., 2022). Detailed evaluation for these conditions is outside the scope of a standard SANE evaluation, but patients should be given counseling and psychological or psychiatric follow-up referrals as needed. However, since patients with pre-existing mental illness are at higher risk for assault and are susceptible to post-traumatic exacerbation of their condition (Brown et al., 2013; Christ et al., 2018; Krahé & Berger, 2017; Manning et al., 2019; Miles et al., 2022), some of them may need an urgent psychiatric evaluation during the encounter for SA. Because of the time spent and the personal nature of their interaction with patients during the medical forensic exam, SANEs are the most likely member of the team to pick up on patient statements and behaviors that would necessitate further evaluation. Such signs could include statements indicative of depression, hopelessness, anxiety, and suicidal or homicidal thoughts with or without a plan. When deciding which patients should be provided with psychiatric evaluation prior to discharge, it is useful to review the criteria for involuntary admission as defined by the American Psychiatric Association. The criteria are as follows: “As the result of the mental disorder, the person is likely to (i) cause harm to self; (ii) suffer physical harm as a result of an inability to satisfy the person’s basic needs for nourishment, personal or medical care, shelter, or self-protection; (iii) suffer substantial mental deterioration associated with significant impairment of judgment, reason, or behavior causing a marked decrement in the person’s previous ability to function; or (iv) cause harm to others.” (American Psychiatric Association, 2020). Although it is outside the scope of practice of a registered nurse to make a decision regarding involuntary admission, they are in a position to notice signs that the patient may be unsafe to discharge, or a danger to self or others, and to request evaluation by a physician or an APP.

Conclusion

Medical screening exams should precede evaluation by a forensic nurse, but sometimes in a stable patient in a busy emergency department, they may not be completed in detail or the licensed provider may have concerns about clothing removal due to the forthcoming evidence

collection. SANEs may be the first medical providers to examine the patient without clothing and to perform a complete head-to-toe exam. It is important that the evaluating SANE, or a forensic nurse in general, is vigilant and has a low threshold to trigger a more detailed medical evaluation if any concerns arise. Having said that, some elements of the exam require advanced nursing skills and additional training may be needed, especially for nurses who do not have clinical experience with critical patients in the emergency department or intensive care settings. The majority of SA exams done in the ED will have a physician present on site. However, in states that have standalone Sexual Assault centers, it is essential for the SANE providing forensic services to be thoroughly trained in assessing, identifying, and addressing significant findings. They must also be prepared to pursue additional testing and imaging when necessary. When staffing these freestanding SA centers, having an advanced practice provider available on-site should be considered. If this is not feasible, a clear protocol and algorithm should be established to ensure prompt access to these providers for consultation and escalation.

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Appendix A: Physical Findings and Suspected Injuries

Body Area	Exam Findings	Subjective Symptoms	Suspected Injury
Head	Raccoon eyes, Battle sign, skull deformity, CSF rhino-/otorrhea	Headache, dizziness, vision/hearing changes	Basilar skull fracture
Ears	Hemotympanum	Headache, confusion, photophobia, nausea/vomiting, vision/hearing changes	Intracranial bleed
	Auricular cartilage swelling/deformity	External ear pain/swelling, warmth, decreased/muffled hearing	Auricular hematoma
Eyes	Anisocoria (uneven pupils)	Headache, neck/facial pain, pulsatile tinnitus, vision changes, focal weakness/numbness	Carotid/cerebral artery dissection
	Vertical nystagmus	Headache, dizziness, confusion, amnesia, nausea/vomiting, vision/hearing changes, mood swings	Traumatic brain injury, concussion
	Proptosis, vision loss	Severe eye pain, pressure behind eye, vision changes, painful eye movements	Retrobulbar hematoma
	Abnormal extraocular movements	Double vision, painful eye movements, vision changes, periorbital swelling, facial numbness	Extraocular muscle entrapment, orbital fracture
	Deformed or deflated globe	Severe eye pain, fluid gush from eye, vision changes, photophobia, periorbital swelling, nausea/vomiting	Globe rupture
Mouth	Misaligned tooth	Tooth pain/sensitivity, rough tooth edge, tooth instability, gum swelling/bleeding	Tooth fracture, subluxation, or avulsion
	Malocclusion	Jaw pain/swelling, limited mouth opening, difficulty chewing or speaking	Mandibular fracture
Neck	Bruising, bruit with auscultation	Unilateral neck pain, facial/jaw pain, headache, dizziness, speech difficulties, vision changes, tinnitus	Carotid artery dissection
	Midline tenderness, step-offs, neurologic deficits	Localized back pain, numbness/tingling, weakness/paralysis of limbs, bowel/bladder dysfunction	Spinal fracture or subluxation, spinal cord injury
Thorax	Chest wall tenderness, crepitus, swelling	Localized chest pain, chest tightness, shortness of breath or dyspnea	Rib or sternal fracture
	Paradoxical breathing	Chest pain, dyspnea, hemoptysis	Flail chest; pulmonary contusion
	Absent lung sounds	Chest pain, dyspnea, cough/hemoptysis, chest tightness/fullness, light-headedness	Hemo-/pneumothorax
Abdo-men	Guarding, rebound	Severe abdominal pain worse with movement, bloating, nausea/vomiting, anorexia	Acute abdomen or peritonitis
	Grey Turner sign, Cullen sign	Abdominal or back pain, nausea/vomiting, dyspnea, light-headedness	Intra-/retroperitoneal bleed
Extrem-ities	Extreme tenderness, tense compartments, skin discoloration	Severe pain disproportionate to injury, pain with limb movement, numbness/tingling, weakness/paralysis	Compartment syndrome
	Deformity, absent pulses, skin discoloration	Localized pain, swelling, inability to move limb, numbness/tingling, cold sensation	Fracture or dislocation, vascular injury
Vagina	Sharp pain during vaginal penetration, bleeding, abdominal pain	Pain during exam, bleeding, peritoneal signs	Deep vaginal laceration, vaginal perforation
Anus	Deep laceration, bleeding, pain, incontinence	Pain, bleeding	Anal sphincter injury