

# Neck Injuries

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## Autopsy: External Exam

- [Ligature Furrow](#)
1. "A deep ligature furrow encircles the entire neck. ([photo of front of neck](#); [photo of back of neck](#))
  2. "The width of the furrow varies from one-eighth of an inch to five/sixteenths of an inch and is horizontal in orientation, with little upward deviation." ([photo](#))
  3. "The ligature furrow crosses the anterior midline of the neck just below the laryngeal prominence, approximately at the level of the cricoid cartilage."
  4. "It is almost completely horizontal with slight upward deviation from the horizontal towards the back of the neck."
  5. "The midline of the furrow mark on the anterior neck is 8 inches below the top of the head."
  6. "The midline of the furrow mark on the posterior neck is 6.75 inches below the top of the head."
  7. Further details are contained in [The Cords](#).
- [Petechial Hemorrhage on Neck](#)
1. "The skin of the anterior neck above and below the ligature furrow contains areas of petechial hemorrhage and abrasion encompassing an area measuring approximately 3 X 2 inches."
  2. "The remainder of the abrasions and petechial hemorrhages of the skin above and below the anterior projection of the ligature furrow are nonpatterned, purple to rust colored, and present in the midline, right, and left areas of the anterior neck."
  3. "The skin just above the ligature furrow along the right side of the neck contains petechial hemorrhage composed of multiple confluent very small petechial hemorrhages as well as several larger petechial hemorrhages measuring up to one-sixteenth and one-eighth of an inch in maximum dimension."
  4. "Similar smaller petechial hemorrhages are present on the skin below the ligature furrow on the left lateral aspect of the neck."
- [Triangular Abrasion on Neck](#)
1. "The area of abrasion and petechial hemorrhage of the skin of the anterior neck includes on the lower left neck, just to the left of the midline, a roughly triangular, parchment-liferust colored abrasion which measures 1.5 inches in length with a maximum width of 0.75 inches."
  2. "This roughly triangular shaped abrasion is obliquely oriented with the apex superior and lateral."
- [Gold Chain with Cross](#). "Also secured around the neck is a gold chain with a single charm in the form of a cross." ([side photo](#); [front photo](#))

## Autopsy: Internal Exam

- "Dissection of the neck is performed after removal of the thoracoabdominal organs and the brain."
- "The anterior strap musculature of the neck is serially dissected. Multiplesections of the sternocleidomastoid muscle disclose no hemorrhages."
- "Sections of the remainder of the strap musculature of the neck disclose no evidence of hemorrhage."
- "Examination of the thyroid cartilage, cricoid cartilage and hyoid bone disclose no evidence of fracture or hemorrhage."
- "Multiple cross sections of the tongue disclose no hemorrhage or traumatic injury."
- "The thyroid gland weighs 2 gm and is normal in appearance. Cut sections are finely lobular and red-tan."
- "The trachea and larynx are lined by smooth pink-tan mucosa without intrinsic abnormalities."
- [Neck Condition](#). "The neck contains no palpable adenopathy or masses and the trachea and larynx are midline."

## Autopsy: Microscopic Examination

- Note: All sections stained with H&E.
- [Thyroid](#).
- 1. "The thyroid gland is composed of normal-appearing follicles."
- 2. "An occasional isolated area of chronic interstitial inflammatory infiltrate is seen."
- 3. "There is also a small fragment of parathyroid tissue."
- [Trachea](#). (All sections stained with H&E). "There is mild chronic inflammation in the submucosa of the trachea." Internet poster [oneeyedJack](#) has suggested this is consistent with a cold or allergies.

## Non-Autopsy Sources

- **Strangulation**. Internet poster [Rainsong](#) has provided some background information on strangulation describing the characteristics accompanying manual vs. ligature strangulation. "The reasons why some hyoids fracture and others do not may relate to the nature and magnitude of force applied to the neck, age of the victim, nature of the instrument (ligature or hands) used to strangle, and intrinsic anatomic features of the hyoid bone." This material explains in more detail why.
- **Petechiae on Neck**.
- 1. **Multiple Ligature Marks Not Uncommon**. "It is not unusual in homicidal ligature strangulation to find that there is more than one ligature mark, each of varying intensity and crossing each other, in parallel or at an angle to each other. Together with such an appearance, one quite commonly sees abrasions caused by movement of a ligature across the neck, or associated fingernail marks, either from the victim attempting to remove the ligature or (together with finger- tip bruising) from the assailant attempting to secure the ligature and/or restrain the neck from moving or even attempting manual strangulation." [Brent Turvey](#), "A Guide to the Physical Analysis of Ligature Patterns in Homicide Investigations," Knowledge Solutions Library, Electronic Publication, Winter, 1996.
- 2. According to [forensicmed.co.uk](#) "where a constricting band is tightened around the neck, there is usually gross congestion, cyanosis and petechiae in the face if the pressure is maintained for more than about 20 seconds."
- 3. Internet poster [One-eyed Jack](#) notes that petechiae are observed *below* where the ligature is embedded in the neck. But she claims that petechiae only appear *above* a ligature. She [believes](#) this indicates "the ligature had been placed on the lower neck and tightened long enough in that position to burst blood vessels."
- 4. Internet poster [Antik](#) has [suggested](#) a scenario that would account for this and the use of the paintbrush: the perp began a ligature strangulation, discovered that it was not tight enough and subsequently tied in the paintbrush for the finally tightening/strangulation, at which point the ligature slid up the neck slightly from where it had been.
- **Alive Prior to Strangulation?** "The autopsy report supports the conclusion that she was alive before she was asphyxiated by strangulation and that she fought her attacker in some manner. (SMF P 42-43, 46, 48; PSMF P 42-43, 46, 48.)" (Carnes 2003:21). Close-up [photos](#) show evidence of scratches.
- **Strangulation with Scarf?** Some believe the dark red mark below the ligature may indicate JBR was first strangled with a scarf before the cord ligature was applied. Close-up [photos](#) compare JBR's neck injuries to those of a victim strangled by a scarf (caution: graphic images).
- **Evidence of Struggle?** "Evidence gathered during the autopsy is consistent with the inference that she struggled to remove the garrote from her neck. (SMF P 44; PSMF P 44.)" (Carnes 2003:21).