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”Ankle Closure Methods: An Expert Survey of Orthopedic Trauma Association (OTA) Members and Review of the Literature”

Ankle fractures are very common, accounting for 10.2% of all bone injuries. Due to the lack of the subcutaneous support in the area, skin closure following ankle fracture surgery is particularly challenging. The purposes of this study were to evaluate the preferences of orthopedic trauma experts regarding skin closure methods after open reduction and internal fixation (ORIF) of rotational ankle fractures and to review current literature to compare outcomes of common skin closure methods.

A 23-item web-based questionnaire was advertised to active members of the Orthopedic Trauma Association (OTA). Using a cross-sectional survey study design, we evaluated the preferences of suture type and technique for skin closure after fixation of rotational ankle injuries. The majority of respondents are fellowship trained, and practice in a Level 1 academic setting. A review was also conducted using the main medical databases to evaluate the available literature and to analyze the results of studies involving outcomes following common skin closure methods in a variety of surgeries.

166 of 637 active OTA members (26.1%) completed the survey. Nearly all respondents indicated that they close these wounds in a layered fashion. The most utilized skin closure method after ORIF of rotational ankle injuries was interrupted non-absorbable nylon suture (49.7%). Other top methods included staples (18.2%) and running non-absorbable sutures (16.4%). The preference for interrupted non-absorbable suture persisted even when treating patients thought to have a higher risk of wound complications (eg. diabetics). A majority of closures were reported to require less than 10 minutes (51.8%) and were most commonly performed by residents (50.6%). Non-absorbable sutures were most commonly removed in the 2nd to 3rd week post operatively, and typically, range of motion of the operative ankle was initiated then. Wound complications of all patients were felt to occur in 1-5% of all cases. Thirteen studies presenting wound outcomes following common skin closure methods for various surgeries were included in our review. Four compared suture types and ten compared sutures verses staples. Staple closure was significantly associated with quicker closing time, greater reported pain, and worse cosmetic scores compared to sutures. When comparing suture methods, interrupted non-absorbable sutures was associated with a significantly less incidence of wound dehiscence compared to continuous non-absorbable.

The best method of skin closure after ORIF of rotational ankle injuries remains unproven. The relative majority of OTA members prefer to close skin with interrupted nylon after a layered closure, even when treating high risk patients. This method has also been shown to be associated with greater cosmetic scores and less pain compared to staples. The decreased rates of dehiscence compared to continuous non-absorbable could explain the higher usage rate following ORIF of ankle fractures.