**Wrist Ganglion Treatment: Systematic Review and Meta-Analysis**

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- Ganglions are the most common soft tissue tumors of the hand and wrist.
- Typically treated with observation, aspiration, or surgical excision (open or arthroscopic); widespread variability in published outcomes.
- The objective of this study was to review the recurrence and complication rates reported for all modalities used to treat adult wrist ganglions and to generate a meta-analysis comparing the two most common options: open surgical excision and aspiration.

**Methods**

- **Registration:** PROSPERO (CRD42014007441)
- **Search strategy:** Systematic search of MEDLINE and EMBASE for articles published between 1990 and 2013.
- **Inclusion criteria:** Reported ganglion treatment outcomes; recurrent ganglions treated with the same modality excluded.
- **Screening and data extraction:** Two independent reviewers.
- **Risk of Bias:** Cochrane Collaboration’s tool for randomized controlled trials and the Newcastle-Ottawa Scale for cohort studies; GRADE methodology to evaluate quality of evidence.

**Results**

- **RCTs: Recurrence with Surgical Excision vs. Aspiration**
  - Open surgical excision was associated with a 76% reduction in recurrence compared with aspiration ± corticosteroid (RR=0.24; 95% CI=0.08-0.71; p=0.01; I²=0%); RCT quality was ‘moderate’ (GRADE).

- **Cohorts: Recurrence with Surgical Excision vs. Aspiration**
  - In cohort studies, open surgical excision was associated with a 58% reduction in recurrence compared with aspiration ± corticosteroid (RR=0.42; 95% CI=0.21-0.85; p=0.02; I²=87%); cohort study quality was ‘very low’ (GRADE).

- **Cohorts: Recurrence with Aspiration vs. Reassurance**
  - Aspiration ± corticosteroid was not associated with a reduction in recurrence compared with observation / reassurance (RR=0.99; 95% CI=0.77-1.28; p=0.96; I²=0%); cohort study quality was ‘very low’ (GRADE).

**Conclusions**

- Open surgical excision offers a significantly lower chance of recurrence compared with aspiration ± corticosteroid but carries added risk of complications.
- Aspiration is a simple option with a low risk of complications but appears to provide no significant benefit when compared with observation / reassurance alone.

- Further RCTs are needed to increase confidence in the estimate of effect and to compare complications between treatments.
- Treatment selection for wrist ganglions should be guided by: (i) patient symptoms, (ii) natural history of the ganglion, and (iii) potential outcomes and complications of treatment options.