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# FINGER PROXIMAL INTERPHALANGEAL JOINT GAP ARTHROPLASTY

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**Background:** The proximal interphalangeal (PIP) joint plays an important role in both grasp and pinch. In terms of mobility and stability, an intact PIP joint plays an important role in isolated finger function as well as the function of the entire hand. Currently, there are only a few surgical management protocols: arthrodesis, arthroplasty without joint replacement and arthroplasty with prosthetic replacement. This study aims to evaluate the gap arthroplasty technique as an alternative method for PIP joint reconstruction and to identify its advantages and disadvantages.

**Methods:** This interventional prospective study was conducted in a university hospital setting. We performed PIP joint gap arthroplasty using a dynamic traction device system after resection of the ankylotic area. Results were evaluated after 6 months minimum follow up period based on range of motion (ROM), pain relief according to the visual analogue scale (VAS), stability under manual stress, joint alignment according to radiographs and overall patient satisfaction according to a score we designed.

**Results:** After  $17.23 \pm 5.10$  months mean follow up period, the mean flexion at the PIP joint was  $66.15^\circ \pm 18.16^\circ$ , the mean extension lag was  $25.38^\circ \pm 8.77^\circ$  and the mean active ROM was  $40.77^\circ \pm 20.90^\circ$ . VAS improved from 8 (ranging from 7 to 9) preoperatively to 1 (ranging from 0 to 2) postoperatively which was statistically significant ( $P=0.001$ ). Six joints (46.2% of cases) were stable under manual stress and three cases (23.1% of cases) showed PIP joint alignment in radiographs. The overall patient satisfaction was 4 (ranging from 3 to 5).

**Conclusions:** Gap arthroplasty is an easy and effective technique for the PIP joint, and it does not require expensive materials as do artificial joint procedures. However, further studies are needed to conduct a long term functional evaluation.

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