

# DIPJ arthritis

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Interphalangeal Joint Reduces Pain and Improves Extension at the Joint; Results From the Splint-OA Study” ref\_num: 15 evidence\_tier: paper evidence\_level: 2 doi: 10.1016/j.jht.2013.08.004 year: 2014 - title: “Effect of immobilization of the distal interphalangeal joint of fingers on grip strength” ref\_num: 16 evidence\_tier: paper evidence\_level: 4 doi: 10.1177/1753193418765068 year: 2018 - title: “Floating Distal Interphalangeal Joint Injury: Case Report” ref\_num: 17 evidence\_tier: case\_report evidence\_level: 5 doi: 10.1016/j.jhsa.2010.05.025 year: 2010 - title: “Risk factors in distal interphalangeal joint arthrodesis in the hand: a retrospective study of 173 cases” ref\_num: 18 evidence\_tier: paper evidence\_level: 3 doi: 10.1177/17531934221111641 year: 2022 - title: “Osteoarthritis of the Distal Interphalangeal Joint” ref\_num: 19 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jhsa.2010.09.003 year: 2010 - title: “Biomechanical Analysis of Internal Fixation Methods for Distal Interphalangeal Joint Arthrodesis” ref\_num: 20 evidence\_tier: paper evidence\_level: 5 doi: 10.1177/1558944715627211 year: 2016 - title: “Distal Interphalangeal Joint Bony Dimensions Related to Headless Compression Screw Sizes” ref\_num: 21 evidence\_tier: paper evidence\_level: 4 doi: 10.1016/j.jhsa.2014.02.007 year: 2014 - title: “The Effect of Flexor Digitorum Profundus Dynamic Tenodesis on the Distal Interphalangeal Joint: A Cadaver Study” ref\_num: 23 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jhsg.2020.08.007 year: 2020 - title: “Tensile load on the flexor digitorum profundus tendon during palmar and lateral blocking exercises: Influence on blocking force and distal interphalangeal joint flexion angle” ref\_num: 26 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jht.2020.07.004 year: 2021 - title: “Primary Distal Interphalangeal Joint Tenosynovial Chondromatosis of the Small Finger: A Case Report With Literature Review” ref\_num: 27 evidence\_tier: case\_report evidence\_level: 5 doi: 10.1177/15589447211049520 year: 2022 - title: “Dimensional Analysis of the Distal Phalanx with Consideration of Distal Interphalangeal Joint Arthrodesis Using a Headless Compression Screw” ref\_num: 31 evidence\_tier: paper evidence\_level: 4 doi: 10.1007/s11552-014-9679-x year: 2014 - title: “Distribution of Nerve Endings in Human Distal Interphalangeal Joint and Surrounding Structures” ref\_num: 32 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jhsa.2010.11.050 year: 2011 - title: “Differences between dorsal and volar dislocations of the distal interphalangeal joint of fingers: a report of 30 cases” ref\_num: 33 evidence\_tier: paper evidence\_level: 4 doi: 10.1177/1753193415616957 year: 2016 - title: “Rater Agreement of Post-Traumatic Osteoarthritis of the Distal Interphalangeal Joint 12 Years After a Mallet Finger Fracture” ref\_num: 34 evidence\_tier: paper evidence\_level: 4 doi: 10.1016/j.jhsa.2024.03.012 year: 2024 - title: “Tenodesis for Restoration of Distal Interphalangeal Joint Flexion in Unrepairable Flexor Digitorum Profundus Injuries” ref\_num: 35 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jhsa.2013.10.009 year: 2014 - title: “Collagenase Clostridium histolyticum for the Treatment of Distal Interphalangeal Joint Contractures in Dupuytren Disease” ref\_num: 36 evidence\_tier: paper evidence\_level: 4 doi: 10.1016/j.jhsa.2018.07.004 year: 2019 - title: “Cheilectomy for Treatment of Symptomatic Distal Interphalangeal Joint Osteoarthritis: A Review of 78 Patients” ref\_num: 37 evidence\_tier: paper evidence\_level: 4 doi: 10.1016/j.jhsa.2017.07.006 year: 2017 - title: “Dorsal Digital Septum of the Distal Interphalangeal Joint” ref\_num: 38 evidence\_tier: paper evidence\_level: 5 doi: 10.1016/j.jhsa.2008.11.030 year: 2009 synthesis\_version: “v2” verifier\_status: skipped

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## Overview

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- Percutaneous DIP joint arthrodesis is advantageous compared with open fusion techniques in select patients [1].

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### CQ HAND + UPPER LIMB

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- Swan neck deformity progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Simultaneous surgical intervention is recommended for severe painful osteoarthritis of both the PIP and DIP joints of the same digit [3].
- Denervation with cheilectomy presents a motion-preserving alternative to arthrodesis for symptomatic DIP joint osteoarthritis [4].
- Lateral approach and plate fixation for DIP joint arthrodesis yields results equivalent to traditional methods but with fewer major complications [5].
- The combination of DIP arthrodesis and PIP Swanson arthroplasty results in favorable outcomes regarding simultaneous bony union and flexibility [7].
- Silicone interpositional arthroplasty of the DIP joint is an acceptable alternative to arthrodesis, achieving excellent pain relief and a range of movement of 30–40 degrees [8].
- Silicone interpositional arthroplasty of the DIP joint has a low overall complication rate of 5% [8].
- The smile incision and reverse shotgun approach is a good surgical option for DIPJ arthrodesis when more volar part joint preparation and more volar implant insertion sites are necessary [9].
- The nonaxial multiple small screws (NMSS) technique is a feasible option for DIPJ and thumb IPJ arthrodesis, especially when a small finger is indicated and a significant flexion angle is required [11].
- Customized structural bone grafting addresses bone stock loss and medullary absence in failed DIPJ silicone arthroplasty, achieving reliable union rates and high patient satisfaction [13].
- There is no difference in biomechanical performance between K-wires and compression screws for DIPJ arthrodesis [20].
- Implant selection for DIPJ fusion should consider factors such as cost and complication profiles given the lack of difference in biomechanical performance between K-wires and compression screws [20].

## Anatomy & Pathophysiology

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- Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured [6].
- Understanding of DIP joint morphology may lend insight into the biomechanics and disease progression within the DIP joints [10].
- A substantial number of distal phalanges are too small to accommodate commonly available headless compression screws, particularly in females and the small finger [31].
- Irreducibility was more commonly seen in dorsal than in volar dislocations of the DIP joint [33].
- Volar dislocations of the DIP joint carried a higher risk of instability immediately after reduction compared to dorsal dislocations [33].
- Biomechanically, dynamic tenodesis for the DIP joint using the remaining FDP tendon results in a flexion angle greater than 30 degrees [23].

- In a cadaveric model, tenodesis successfully restored coordinated interphalangeal joint flexion after a simulated zone I FDP laceration with improvements in DIP joint flexion and composite finger flexion [35].
- Lateral blocking with incremental joint angles allows a safer application of force for the healing tendon during palmar and lateral blocking exercises [26].

## Classification

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- Swan neck deformity in the DIP joint progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Radiological osteoarthritis following a mallet finger fracture follows a similar course to the natural degenerative process in the DIP joint [12].
- Post-traumatic osteoarthritis of the DIP joint after mallet finger fractures is accompanied by a decrease in range of motion, though this does not clinically affect patient-reported outcome measures (PROMs) [12].
- The interrater reliability of the Kellgren & Lawrence classification system for post-traumatic osteoarthritis in the DIP joint after mallet finger fractures is considerably lower than initially assumed [34].
- The interrater reliability of the OARSI classification system for post-traumatic osteoarthritis in the DIP joint after mallet finger fractures is considerably lower than initially assumed [34].
- Current concepts regarding DIP joint osteoarthritis highlight the roles of cartilage, subchondral bone, and soft tissue structures in etiology, pathogenesis, and evaluation [19].
- Morphological understanding of DIP joint curvatures may provide insight into the biomechanics and disease progression within the DIP joints [10].
- Examination of type I and type II nerve endings provides new information on the sensory systems of the DIP joints and surrounding structures [32].
- Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured [6].

## Clinical Presentation

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- Swan neck deformity in the DIPJ progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured [6].
- Floating DIP joint injuries can be misdiagnosed initially due to minimal deformity [17].
- Radiological osteoarthritis following a mallet finger fracture is similar to the natural degenerative process in the DIP joint [12].
- Radiological osteoarthritis after a mallet finger fracture is accompanied by a decrease in range of motion of the DIP joint [12].

- Radiological osteoarthritis after a mallet finger fracture does not clinically affect patient-reported outcome measures (PROMs) [12].
- Primary synovial chondromatosis of the DIPJ is an extremely rare entity that requires accurate diagnosis to distinguish from other arthropathies [27].
- Understanding the morphology of DIPJ curvatures may lend insight into the biomechanics and disease progression within the DIP joints [10].
- Osteoarthritis of the DIPJ involves roles of cartilage, subchondral bone, and soft tissue structures in its etiology, pathogenesis, and evaluation [19].

## Investigations

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- Percutaneous DIP joint arthrodesis is advantageous compared with open fusion techniques in select patients [1].
- Swan neck deformity progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Simultaneous surgical intervention is recommended for severe painful osteoarthritis of both the PIP and DIP joints of the same digit [3].
- Denervation with cheilectomy presents a motion-preserving alternative to arthrodesis for symptomatic DIP joint osteoarthritis [4].
- Lateral approach and plate fixation for DIP joint arthrodesis yields results equivalent to traditional methods with fewer major complications [5].
- Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured [6].
- The combination of DIP arthrodesis and PIP Swanson arthroplasty results in favorable outcomes regarding simultaneous bony union and flexibility [7].
- Silicone interpositional arthroplasty of the DIP joint is an acceptable alternative to arthrodesis, achieving excellent pain relief and a range of movement of 30–40 degrees with a low overall complication rate of 5% [8].
- The smile incision and reverse shotgun approach is a good surgical option for DIPJ arthrodesis when more volar part joint preparation and more volar implant insertion sites are necessary [9].
- Understanding the morphology of DIP joints may lend insight into the biomechanics and disease progression within the DIP joints [10].
- The nonaxial multiple small screws (NMSS) technique is a feasible option for DIPJ and thumb IPJ arthrodesis, especially when a small finger is indicated and a significant flexion angle is required [11].
- Radiological osteoarthritis after a mallet finger fracture is similar to the natural degenerative process in the DIP joint and is accompanied by a decrease in range of motion of the DIP joint [12].
- Radiological osteoarthritis after a mallet finger fracture does not clinically affect patient-reported outcome measures (PROMs) [12].

- Customized structural bone grafting addresses bone stock loss and medullary absence in failed DIPJ silicone arthroplasty, achieving reliable union rates and high patient satisfaction [13].
- Immobilization of the distal interphalangeal joint of any finger reduces the overall grip strength of the hand [16].
- The reduction in grip strength from DIP joint immobilization becomes progressively more pronounced from the index to the little fingers [16].
- Floating DIP joint injuries can be misdiagnosed initially due to minimal deformity [17].
- Open reduction and internal fixation is a viable treatment option for chronic floating DIP joint injuries, though osteoarthritis may develop [17].
- Arthrodesis of the distal interphalangeal joint often leads to complications [18].
- Current concepts regarding DIP joint osteoarthritis examine the etiology, pathogenesis, and evaluation of the condition, highlighting the roles of cartilage, subchondral bone, and soft tissue structures [19].
- A size mismatch existed between the anatomic dimensions of the DIP joint and commercially available headless compression screws [21].
- A distinct collagen septum exists between the extensor tendon and skin at the DIP joint [38].

## Treatment

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- Percutaneous DIP joint arthrodesis is advantageous compared with open fusion techniques in select patients [1].
- Simultaneous surgical intervention is recommended for severe painful osteoarthritis of both the PIP and DIP joints of the same digit [3].
- Denervation with cheilectomy presents a motion-preserving alternative to arthrodesis for symptomatic DIP joint osteoarthritis [4].
- Lateral approach and plate fixation for DIP joint arthrodesis yields results equivalent to traditional methods with fewer major complications [5].
- Simultaneous anterograde screw arthrodesis of the DIP joint and silastic PIP joint replacement results in favorable outcomes regarding bony union and flexibility [7].
- Silicone interpositional arthroplasty of the DIP joint is an acceptable alternative to arthrodesis, achieving excellent pain relief and a range of movement of 30–40 degrees [8].
- Silicone interpositional arthroplasty of the DIP joint has a low overall complication rate of 5% [8].
- The smile incision and reverse shotgun approach is a good surgical option for DIPJ arthrodesis when more volar part joint preparation and more volar implant insertion sites are necessary [9].
- The nonaxial multiple small screws (NMSS) technique is a feasible option for DIPJ and thumb IPJ arthrodesis, especially when a small finger is indicated and a significant flexion angle is required [11].
- Customized structural bone grafting addresses bone stock loss and medullary absence in failed DIPJ silicone arthroplasty, achieving reliable union rates and high patient satisfaction [13].

- Diabetes and surgeon experience are factors increasing the risk of postoperative complications in DIP/thumb IP joint arthrodeses [14].
- Splinting of the DIP joint reduces pain and improves extension at the joint without causing non-compliance, increased stiffness, or restriction of range of motion [15].
- Open reduction and internal fixation is a viable treatment option for chronic floating DIP joint injuries, though osteoarthritis may develop [17].
- Injection with collagenase *Clostridium histolyticum* is an option for the treatment of DIP joint contractures in Dupuytren disease, though the potential risk for recurrence should be carefully weighed [36].
- Open DIP joint cheilectomy is a safe and effective alternative to DIP joint arthrodesis in patients with symptomatic osteoarthritis who wish to preserve joint motion [37].

## Complications

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- Swan neck deformity in the DIPJ progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Palmar subluxation of a DIP joint is expected when more than one half of the dorsal articular surface is injured, even without preexisting arthritic deformity [6].
- Radiological osteoarthritis following a mallet finger fracture follows a natural degenerative process and is accompanied by a decrease in DIPJ range of motion [12].
- Diabetes is identified as a factor increasing the risk of postoperative complications in DIP and thumb IP joint arthrodeses [14].
- Surgeon experience is identified as a factor increasing the risk of postoperative complications in DIP and thumb IP joint arthrodeses [14].
- Arthrodesis of the distal interphalangeal joint often leads to complications [18].
- Silicone interpositional arthroplasty of the DIP joint has a low overall complication rate of 5% [8].
- Failed Swanson's arthroplasty of the DIPJ can result in bone stock loss and medullary absence [13].

## Recovery

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- Percutaneous DIP joint arthrodesis is advantageous compared with open fusion techniques in select patients [1].
- Swan neck deformity progresses significantly over time due to increasing DIPJ flexion contracture [2].
- Simultaneous surgical intervention is recommended for severe painful osteoarthritis of both the PIP and DIP joints of the same digit [3].
- Denervation with cheilectomy presents a motion-preserving alternative to arthrodesis for symptomatic DIP joint osteoarthritis [4].

- Lateral approach and plate fixation for DIP joint arthrodesis yields results equivalent to traditional methods but with fewer major complications [5].
- Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured [6].
- The combination of DIP arthrodesis and PIP Swanson arthroplasty results in favorable outcomes regarding simultaneous bony union and flexibility [7].
- Silicone interpositional arthroplasty of the DIP joint is an acceptable alternative to arthrodesis, achieving excellent pain relief and a range of movement of 30–40 degrees [8].
- Silicone interpositional arthroplasty of the DIP joint has a low overall complication rate of 5% [8].
- Radiological osteoarthritis after a mallet finger fracture is similar to the natural degenerative process in the DIP joint [12].
- Radiological osteoarthritis after a mallet finger fracture is accompanied by a decrease in range of motion of the DIP joint [12].
- The decrease in range of motion of the DIP joint following radiological osteoarthritis from a mallet finger fracture does not clinically affect PROMs [12].
- Customized structural bone grafting addresses bone stock loss and medullary absence in failed DIPJ silicone arthroplasty, achieving reliable union rates and high patient satisfaction [13].
- Diabetes is a factor increasing the risk of postoperative complications in DIP and thumb IP joint arthrodeses [14].
- Surgeon experience is a factor increasing the risk of postoperative complications in DIP and thumb IP joint arthrodeses [14].
- Splinting of the DIP joint reduces pain and improves extension at the joint [15].
- Splinting of the DIP joint does not give rise to non-compliance, increased stiffness, or restriction of range of motion [15].

## Key Evidence

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- [L4] In select patients, this percutaneous DIP joint arthrodesis is advantageous in comparison with open fusion techniques. ([10.1007/s11552-010-9265-9](https://doi.org/10.1007/s11552-010-9265-9))
- [L5] The swan neck deformity in this individual progressed significantly with time because of increasing DIPJ flexion contracture. ([10.1016/j.jht.2009.11.005](https://doi.org/10.1016/j.jht.2009.11.005))
- [L3] The authors recommend simultaneous surgical intervention in case of severe painful OA of the PIP and DIP joints of the same digit. ([10.1177/17531934231191255](https://doi.org/10.1177/17531934231191255))
- [L4] It presents a compelling motion-preserving alternative to arthrodesis for symptomatic DIP joint osteoarthritis. ([10.1016/j.jhsa.2026.01.027](https://doi.org/10.1016/j.jhsa.2026.01.027))
- [L4] The results obtained in this small series are equivalent to the traditional methods of DIP joint arthrodesis but with fewer major complications. ([10.1016/j.jhsa.2007.09.004](https://doi.org/10.1016/j.jhsa.2007.09.004))

- [L5] Palmar subluxation of a DIP joint without preexisting arthritic deformity is expected when more than one half of the dorsal articular surface is injured. ([10.1016/j.jhsa.2007.09.006](#))
- [L4] The combination of DIP arthrodesis and PIP Swanson arthroplasty resulted in a favourable outcome in terms of simultaneous bony union and flexibility. ([10.1177/17531934231215790](#))
- [L4] The study confirms that silicone interpositional arthroplasty of the DIP joint is an acceptable alternative to arthrodesis, achieving excellent pain relief and a range of movement of 30–40 degrees with a low overall complication rate of 5%. ([10.1177/1753193411422679](#))
- [L4] This technique may be a good surgical option for DIPJ arthrodesis when more volar part joint preparation and more volar implant insertion sites are necessary. ([10.1186/s12891-024-08016-6](#))
- [L5] Our understanding of morphology may lend insight into the biomechanics and disease progression within the DIP joints. ([10.1007/s11552-014-9605-2](#))
- [L4] Thus, the NMSS technique could be used as a feasible option in DIPJ and thumb IPJ arthrodesis, especially when a small finger is indicated and a significant flexion angle is required. ([10.1186/s12891-022-05473-9](#))
- [L4] Radiological OA after an MFF is similar to the natural degenerative process in the DIP joint and is accompanied by a decrease in range of motion of the DIP joint, which does not clinically affect PROMs. ([10.1016/j.jhsa.2023.03.027](#))
- [L4] A customized structural bone graft using the described technique addresses issues of bone stock loss and medullary absence in failed DIPJ silicone arthroplasty, achieving reliable union rates and high patient satisfaction. ([10.1177/17531934231151217](#))
- [L3] Diabetes and surgeon experience were identified as factors increasing the risk of postoperative complications in these DIP/thumb IP joint arthrodeses. ([10.1186/s12891-024-07361-w](#))
- [L2] It does not give rise to non-compliance, increased stiffness or restriction of range of motion. ([10.1016/j.jht.2013.08.004](#))
- [L4] Immobilization of the distal interphalangeal joint of any finger reduces the overall grip strength of the hand, with the effect becoming progressively more pronounced from the index to the little fingers. ([10.1177/1753193418765068](#))
- [Case\_report] Floating DIP joint injuries can be misdiagnosed initially due to minimal deformity; open reduction and internal fixation is a viable treatment option for chronic cases, though osteoarthritis may develop. ([10.1016/j.jhsa.2010.05.025](#))
- [L3] Arthrodesis of the distal interphalangeal joint often leads to complications. ([10.1177/17531934221111641](#))
- [L5] This current concepts article examines the recent knowledge base regarding the etiology, pathogenesis, and evaluation of osteoarthritis of the distal interphalangeal joint, highlighting the roles of cartilage, subchondral bone, and soft tissue structures. ([10.1016/j.jhsa.2010.09.003](#))
- [L5] Given the lack of difference in biomechanical performance between K-wires and compression screws, consideration should be given to other factors such as cost and complication profiles when choosing an implant for DIPJ fusion. ([10.1177/1558944715627211](#))

- [L4] A size mismatch existed between the anatomic dimensions of the DIP joint and commercially available headless compression screws. ([10.1016/j.jhsa.2014.02.007](https://doi.org/10.1016/j.jhsa.2014.02.007))
- [L5] Biomechanically, dynamic tenodesis for the DIP joint using the remaining FDP tendon is a valuable procedure because it results in a flexion angle greater than 30 degrees. ([10.1016/j.jhsg.2020.08.007](https://doi.org/10.1016/j.jhsg.2020.08.007))
- [L5] This study supports the concept that lateral blocking with incremental joint angles allows a safer application of force for the healing tendon. ([10.1016/j.jht.2020.07.004](https://doi.org/10.1016/j.jht.2020.07.004))
- [Case\_report] Primary synovial chondromatosis of the distal interphalangeal joint is an extremely rare entity that requires accurate diagnosis to distinguish from other arthropathies. ([10.1177/15589447211049520](https://doi.org/10.1177/15589447211049520))
- [L4] A substantial number of distal phalanges are too small to accommodate commonly available headless compression screws, particularly in females and the small finger. ([10.1007/s11552-014-9679-x](https://doi.org/10.1007/s11552-014-9679-x))
- [L5] Our examination of the distribution of type I and type II nerve endings provides new information on the sensory systems of the DIP joints and surrounding structures. ([10.1016/j.jhsa.2010.11.050](https://doi.org/10.1016/j.jhsa.2010.11.050))
- [L4] Irreducibility was more commonly seen in dorsal than in volar dislocations, while volar dislocations carried a higher risk of instability immediately after reduction. ([10.1177/1753193415616957](https://doi.org/10.1177/1753193415616957))
- [L4] The interrater reliability of the Kellgren & Lawrence and OARSI classification systems for post-traumatic osteoarthritis in the distal interphalangeal joint after mallet finger fractures is considerably lower than initially assumed. ([10.1016/j.jhsa.2024.03.012](https://doi.org/10.1016/j.jhsa.2024.03.012))
- [L5] In this cadaveric model, this tenodesis successfully restored coordinated interphalangeal joint flexion after a simulated zone I FDP laceration with improvements in distal interphalangeal joint flexion and composite finger flexion. ([10.1016/j.jhsa.2013.10.009](https://doi.org/10.1016/j.jhsa.2013.10.009))
- [L4] Injection with CCH is an option for the treatment of DIP joint contractures in Dupuytren disease, though the potential risk for recurrence should be carefully weighed prior to its use. ([10.1016/j.jhsa.2018.07.004](https://doi.org/10.1016/j.jhsa.2018.07.004))
- [L4] Open DIP joint cheilectomy is a safe and effective alternative to DIP joint arthrodesis in patients with symptomatic osteoarthritis who wish to preserve joint motion. ([10.1016/j.jhsa.2017.07.006](https://doi.org/10.1016/j.jhsa.2017.07.006))
- [L5] We confirmed the existence of a distinct collagen septum between the extensor tendon and skin at the DIP joint using MRI and histology. ([10.1016/j.jhsa.2008.11.030](https://doi.org/10.1016/j.jhsa.2008.11.030))

## References

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