

Systematic Review Article: Pregnancy-Related Hand & Wrist Problem; Focus in surgery: Systematic Review


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ABSTRACT

Introduction: This review aimed to describe pregnancy-related hand and wrist issues and provide an overview of the pathology, clinic presentations, clinical examinations, and treatment options for these conditions; however, it does not discuss autoimmune-related musculoskeletal disorders during pregnancy. **Material and Methods:** Using the terms " Hand," " Wrist," " Hand and Wrist," " Hand and Wrist problem " "pregnancy-related Hand pain," "pregnancy-related Wrist pain," and "pregnancy-related Hand and Wrist pain," we searched the literature in Pubmed, Cochrane Library, Ovid, and Google for articles in English, Portuguese, and Spanish published in the previous 20 years or older, as appropriate. **Results:** The quality of life for pregnant women who have hand and wrist issues may be reduced. These ailments are temporary, benign, and self-limiting, and it is anticipated that they will go away after giving birth. **Conclusion:** During the third trimester of pregnancy, when hormonal changes, fluid retention, and weight gain are at their peak, hand and wrist problems are most common. Although NA, pyogenic granuloma in the hand, ligamentous laxity of the joints, arthralgia, and exacerbation of arthritis in the hand and wrist have all been reported, the most common disorders are pregnancy-related CTS and De Quervain disease. For problems with the hands and wrists caused by pregnancy, non-surgical treatments are frequently successful.

Introduction

Pregnant women frequently complain of hand and wrist issues. Hand and wrist issues during pregnancy may be made worse or even start off by hormonal changes, fluid retention, and weight gain [1-

3]. Patients may complain of both specific and general issues, which may lower the quality of life for pregnant women. Any treatment must consider the risks to the fetus' health as well as how it will affect the mother's symptoms. As part of a descriptive study, Kesikburun et al. Out of 184 pregnant women, 61 (or 33.2 percent)

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reported experiencing hand and wrist musculoskeletal pain [4-6].

According to Balik et al., these issues were the third most prevalent musculoskeletal complaints, behind low back and back pains. There were 125 (32%) asymptomatic patients, according to a study of the hand and wrist issues in 383 pregnant females at or before 28 weeks of gestation [7-9]. A total of 67.4% of the pregnant women had hand and wrist issues. A further 39 (10.2%), 80 (20.2%), and one (0.3%) patients each had tendonitis, cubital tunnel syndrome, and carpal tunnel syndrome, respectively [10]. In addition, 138 women (32.6%) reported having general symptoms. Undertreatment of pregnant patients with hand and wrist issues is possible. This review aimed to describe pregnancy-related hand and wrist issues and provide an overview of the pathology, clinic presentations, clinical examinations, and treatment options for these conditions; however, it does not discuss autoimmune-related musculoskeletal disorders during pregnancy [11-13].

Material and Methods

Using the terms " Hand," " Wrist," " Hand and Wrist," " Hand and Wrist problem " "pregnancy-related Hand pain," "pregnancy-related Wrist pain," and "pregnancy-related Hand and Wrist pain," we searched the literature in Pubmed, Cochrane Library, Ovid, and Google for articles in English, Portuguese, and Spanish published in the previous 20 years or older, as appropriate.

Pregnancy and nerve disorder of the hand and wrist

Carpal tunnel syndrome

The most frequent musculoskeletal issue during pregnancy is low back pain, followed by carpal tunnel syndrome (CTS). The group of Baumann et al. found that compared to 40 non-pregnant females, sensory conduction parameters of the median nerve were abnormal in 69 pregnant

females [14-16]. In addition, four patients who had electrophysiological median neuropathy later on during pregnancy or after childbirth (Fig 1).

Carpal Tunnel Syndrome during Pregnancy

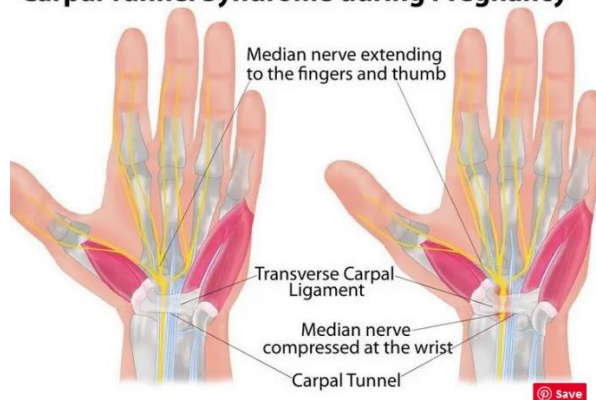


Figure 1: CTS in Pregnancy

This condition affected eight patients (11%) in total [17-19]. The authors came to the conclusion that pregnancy had caused abnormal median nerve hypersensitivity and susceptibility to pressure. Compared to the general population, pregnancy has a higher reported prevalence of CTS, which varies greatly. The prevalence of electrophysiological median neuropathy in pregnancy has been reported to be 7 percent-43 percent; however, 31 percent-62 percent of patients were reported to have self-reported CTS symptoms [20-22]. Because the severity of symptoms and functional impairments of CTS in pregnant females are relatively mild compared to that in non-pregnant females, these conditions may be overlooked by healthcare providers and remain underdiagnosed and undertreated. The third trimester of pregnancy is when body fluid retention and weight gain reach their peak, and this is also when the CTS in pregnancy typically manifests. The third trimester usually sees an aggravation of the CTS that was developed in the first or second trimester. When CTS first manifests, the symptoms are similar to those in patients who are not pregnant [23-25].

In the later stages of the pregnancy, the patient reports wrist pain, night awakenings, decreased two-point discrimination, and thenar muscle atrophy. Tinel's sign, Phalen's test, and Durkan's test may also be positive [26-28].

Both pregnant and non-pregnant females can be diagnosed with median nerve neuropathy at the wrist using the same electrophysiological criteria (sensory latency > 3 ms and motor latency > 4 ms) [29-31]. To confirm median nerve neuropathy at the wrist, an electrophysiological test is not always required of pregnant women. An electrophysiological examination can be avoided because surgery is typically not thought of as a treatment option during pregnancy and because the symptoms typically go away after delivery [32-34].

When compared to pregnant women without CTS, pregnant women with CTS have statistically significantly higher levels of fluid retention. Patients with gestational hypertension and preeclampsia are more likely to develop CTS. The likelihood of developing pregnancy-related CTS may be higher in patients with a higher pre-pregnancy body mass index, a history of smoking and drinking, non-Caucasian ethnicity, changes in glucose metabolism and diabetes, older maternal age, tenosynovitis, and CTS symptoms in prior pregnancies. It has not been established that depression increases the risk of CTS during pregnancy [35-37].

The prognosis for CTS related to pregnancy is typically favorable. The frequency of pregnancy-related CTS symptoms typically decreases a few weeks after delivery and is strongly correlated with loss of the pregnancy weight; however, electrophysiological changes may take longer to return to normal limits [38-40]. The repetitive hand movements necessary for nursing and caring for a newborn, along with any lingering fluid retention and hormonal changes, may cause some patients to experience partial relief of symptoms during the child-nursing period. Padua et al. carried out a systematic review

study [41-43]. More than 50% of patients said their symptoms persisted even after a year of treatment, and about 30% of patients still experienced their symptoms after three years. Pregnancy-related CTS symptoms can be alleviated with activity modification, edema management, and wrist splinting, which maintains the wrist in a neutral position. In most patients, steroid injections may offer transient symptom relief [44-46]. Surgery is rarely necessary, but it may be taken into consideration if the symptoms and functional impairments are severe, nonsurgical treatments are ineffective, and significant nerve compression is found in the electrophysiological study [47-49]. As long as steroids are not contraindicated due to other systemic disorders, they can be used safely during pregnancy and lactation. The mother and fetus can undergo carpal tunnel surgery under local anesthesia without any risks. When surgery is required, the Wide Awake Local Anesthesia No Tourniquet (WALANT) technique may be used in some instances [50-52].

Neuralgic amyotrophy

Acute, intense pain in the arm and shoulder region, followed by weakness, atrophy, and sensory impairment, are the hallmarks of neuralgic amyotrophy (NA), also known as Parsonage-Turner syndrome (PTS). During the peripartum period, a likely immune-mediated mechanism may cause NA or PTS. The most frequently affected nerves are the upper trunks of the brachial plexus, suprascapular nerve, long thoracic nerve, and axillary nerve [53-55]. The anterior interosseous, musculocutaneous, spinal accessory, ulnar, radial, and median nerves are the least frequently affected nerves. Brussé and Burke reported a case of recurrent anterior interosseous nerve palsy in a patient during her three subsequent pregnancies, suggesting that the autonomous nervous system may also be

involved in the NA. An official clinical diagnosis is NA [56-58].

Three to four weeks after the onset of symptoms, electromyography reveals acute denervation with positive sharp waves and fibrillation potentials, whereas electromyography reveals chronic denervation and early reinnervation (polyphasic motor unit potentials). Oral corticosteroid therapy in the acute phase reduces pain and has the potential to hasten recovery. Opioids and non-steroidal anti-inflammatory drugs may also be prescribed for pain management. Physical therapy is advised to treat the persistent symptoms after the acute pain has subsided (Fig 2) [59-61].

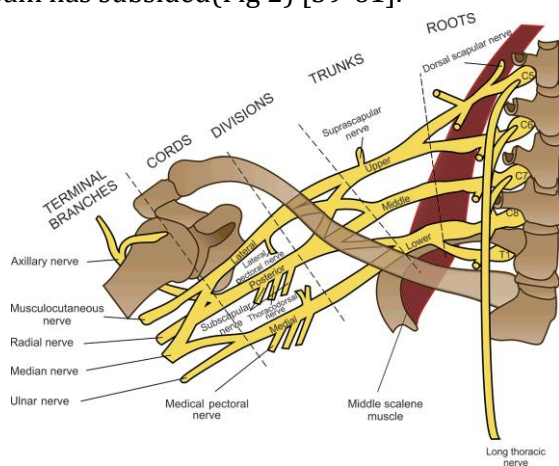


Figure 2: Neuralgic amyotrophy during pregnancy

Pregnancy and stenosing tenosynovitis in the hand and wrist

Stenosing tenosynovitis of the hand and wrist tendons can be brought on by fluid retention, edema, and frequently violent hand movements. The second most frequent hand and wrist condition experienced by pregnant women and new mothers is De Quervain disease, also known as stenosing tenosynovitis of the first extensor compartment.

The patient is predisposed to De Quervain disease by fluid retention during the third trimester of pregnancy and repetitive picking up of the baby in particular positions needed for nursing and child care. Compared to the general

population, pregnant women have a higher incidence of bilateral De Quervain disease involvement. Pain and tenderness over the radial styloid, thickened first extensor retinaculum, and a positive Finkelstein test are symptoms of de Quervain disease. Read and others [62-64].

examined the post-partum de Quervain's disease histopathological manifestations on seven wrists [65-67]. The remarkable thickening of the tendon sheaths was found to be caused by myxoid degeneration, according to a histopathological analysis of the sheaths. In addition, there were noticeable intramural mucopolysaccharide deposits, mainly in the subsynovial region [68-70].

Inflammatory changes, whether acute or long-lasting, were not observed. These results were unrelated to pregnancy or childbirth and resembled those reported in de Quervain's disease patients [71-73]. A thumb splint, non-steroidal anti-inflammatory drugs, and corticosteroid injection into the first extensor compartment are effective non-surgical treatments for De Quervain disease of pregnancy and breastfeeding, which is a self-limiting condition [74-76].

Following the end of breastfeeding, the symptoms typically go away on their own. It was determined that none of the patients with De Quervain disease required surgery, and all of them responded favorably to non-surgical treatments in a randomized prospective study that was carried out on the wrists of 18 pregnant or nursing females. Surgery to release the first extensor compartment may be recommended in the uncommon event that non-surgical treatments are unsuccessful in alleviating symptoms within 4-6 months [77-79].

In Cosgrover et al reported a case of flexor pollicis longus (FPL) stenosing tenosynovitis after childbirth [80]. The patient complained of pain along the thumb's flexor surface. A palpable nodule was located close to the thumb's

metacarpophalangeal joint. The patient was given a thumb spica splint and non-steroidal anti-inflammatory drugs after showing signs of intermittent snapping during flexion and extension of the thumb's interphalangeal joint during the physical examination. She had resumed full activity without restriction after the symptoms subsided after a month [81-83].

Pregnancy and pyogenic granuloma in the hand

A benign vascular tumor is a pyogenic granuloma or lobular capillary hemangioma. It has been documented that pyogenic granulomas develop in correlation with estrogen levels during pregnancy. Vascular endothelial growth factor (VEGF), an angiogenic factor and possibly a precursor to this lesion, is regulated by estrogen [84-86].

The lesion can occasionally show up in the hand. "Rader et al." have documented five cases of pyogenic granulomas in women who were pregnant at the time of their development. They proposed using the term "epulis gravidarum manum" to describe the pyogenic granuloma on pregnant women's hands. An exophytic, friable, reddish-yellow nodule that can easily grow, ulcerate, and bleed is the defining feature of a pyogenic granuloma [87].

Due to a lack of VEGF and a drop in estrogen levels after pregnancy, pyogenic granuloma regresses. Therefore, hormonal changes might make pyogenic granuloma after delivery easier to resolve. Pyogenic granuloma has been suggested to be treated with silver nitrate. According to patients who received treatment for an average of 3 points 5 weeks, it had an 85% success rate [88-90].

If a pyogenic granuloma bleeds and interferes with a pregnant woman's daily activities, it needs to be removed. Since the lesion can only be removed surgically, doing so after childbirth is the most effective way to stop it from returning [91-93].

Pregnancy and ligamentous and joint laxity in the hand

Relaxin is one of the hormones connected to pregnancy that causes generalized ligamentous and joint laxity. Both specific and general hand and wrist issues may result from ligamentous and joint laxity. Lindgren and Kristiansson measured the passive abduction of the ring finger in a cohort study of 200 pregnant women. They discovered that finger joint laxity, which endures after childbirth, is a reflection of the connective tissue's inherent weakness during pregnancy [94-96].

A multiple regression analysis found a positive, significant, and independent relationship between the incidence of back pain in late pregnancy and the postpartum period and the passive abduction angle of the left ring finger in early pregnancy and the number of prior pregnancies. Calguneri and others used the finger hyper-extensometer to measure laxity at the metacarpophalangeal joint of the index finger to examine the changes in peripheral joint laxity occurring during pregnancy in 68 females. When compared to the same subjects' postpartum readings, there was a discernible increase in joint laxity during the third trimester of pregnancy. Females having their second child showed a highly significant increase in laxity when their primigravid and multigravida counterparts were compared. Wolf et al. found that females are more likely than males to have carpometacarpal (CMC) joint arthritis (Fig 3).



Figure 3: Pregnancy and ligamentous and joint laxity in the hand

study the impact of relaxin on the thumb's anterior oblique ligament. The anterior oblique ligament, which contributes to laxity of the CMC joint, was found to contain relaxin receptors by the authors. They hypothesized that relaxin might be involved in ligamentous laxity and the onset of CMC joint arthritis. A splint can help pregnant women with their hand symptoms of ligamentous and joint laxity. Surgery is typically not necessary because joint laxity symptoms typically go away on their own six months after lactation has stopped [97].

Pregnancy and small joint arthralgia and arthritis in the hand

Pregnancy may cause hand arthritis to worsen and small joint arthralgia, both of which are similar to rheumatoid arthritis. There is only one study that describes these conditions in pregnant women. In a prospective study of 157 pregnant women without a history of rheumatic diseases, 22 (14 percent) and 14 (8 percent) of the women had arthralgia and exacerbation of arthritis in the small joints of their hands, respectively.

Except for one patient, all patients experienced arthralgia and arthritis during the third trimester of pregnancy. Each and every arthritis patient tested negative for rheumatoid factor and antinuclear antibody. In all patients, the arthralgia and arthritis symptoms in the small hand joints disappeared spontaneously and right away after delivery. Further research on pregnant women is necessary to determine the role of pregnancy in the development of small joint arthralgia and arthritis in the hand, as well as the best course of treatment. The authors have concluded that it may be a different disease entity.

Conclusion

These ailments are temporary, benign, and self-limiting, and it is anticipated that they will go away after giving birth. During the third trimester of pregnancy, when hormonal changes, fluid retention, and weight gain are at their peak, hand and wrist problems are most common. Although NA, pyogenic granuloma in the hand, ligamentous laxity of the joints, arthralgia, and exacerbation of arthritis in the hand and wrist have all been reported, the most common disorders are pregnancy-related CTS and De Quervain disease. For problems with the hands and wrists caused by pregnancy, non-surgical treatments are frequently successful. The prognosis for hand and wrist issues associated with pregnancy is generally good, and these issues typically go away after childbirth. The postpartum period, however, may see some issues continue.

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