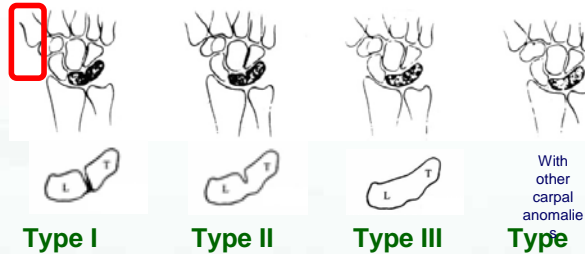


Non Syndromic Congenital Bone Fusion of the Carpus – Cohorte evaluation of 17 patients

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Abstract

Introduction: Incomplete separation of cartilaginous carpal anlage during forth to eighth fetal life results in cartilage fusion (syncondrosis) or bone fusion (synostosis) that become radiographic apparent when carpal ossifies. Such anomalies occur rarely, are most likely asymptomatic and are usually found in radiographic images. Such anomalies occur more frequent in females, blacks and the most common fusions are of the lunate and triquetrum. The second site in frequency is between the capitate and hamate. Synostosis in the radial aspect of the carpus is very rare. Carpal synostosis can be part of a syndrome or an isolate anomaly, usually bilateral. **Objective:** evaluate symptoms and presence of degenerative changes in patients with congenital non syndromic carpus synostosis. **Casuistic:** 17 patients were evaluated from 1989 to 2009. **Results:** Six patients developed pain and degenerative wrist all after the third decade of life. **Discussion:** Complete or Incomplete non syndromic congenital synostosis can cause pain and arthrosis. These patients must be followed and oriented concerning those



Minaar's classification for congenital carpal fusion between lunate and triquetrum.

Type I – cartilage union proximal ; Type II – bone fusion proximal
Type III – complete bone fusion; Type IV – fusion with other carpal anomalies

The coalition between the lunate and triquetrum occurs more often in blacks. Patients from West Africa, especially some Bantu tribes, have a high incidence of this condition⁸. The incidence of carpal coalition is estimated between 0.08% and 0.13%, but the incidence has been reported almost 100 times higher in blacks (9.5%)^(1,2,6). Diagnosis: bilateral radiographic finding in asymptomatic or poorly symptomatic patients. Some reports indicate that the carpal synostosis is rarely associated with impairment of function of the wrist⁽³⁾. There are few reports of symptomatic congenital luno-triquetrum fusion^(9,10). Fusion between bones of different carpal rows should be more symptomatic^(1,4,7).

7 years old black female - asymptomatic type III lunate-triquetrum congenital synostosis.

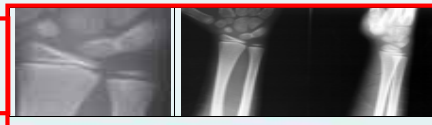
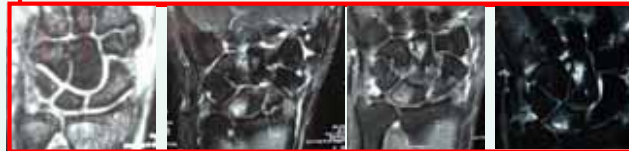


Table: Patients with non syndromic congenital synostosis of the carpus, according gender, age, type of fusion, presence of symptoms and arthritis (data from February, 2011).

Nº	Gender	Age Years	Race	Type of Synostosis	Symptoms	Arthritis
1	F	13	Black	S-T type II	No	
2	F	7	Black	S-T type III	No	
3	F	15	White	S-T type I	No	
4	M	51	Black	S-T type III	Yes	Intercarpal + radio-carpal
5	M	9	Black	S-T type I	No	
6	F	32	White	S-T type I	Yes	Luno-triquetral
7	F	11	Black	S-T type II	No	
8	F	12	Black	S-T type III	No	
9	M	41	Black	S-T type III	Yes	Radio-lunate
10	M	8	White	S-T type I	No	
11	F	11	Black	C-H	No	
12	F	36	White	C-H	Yes	Intercarpal + radio-carpal intercarpal
13	F	47	Black	C-H	Yes	
14	M	8	Black	C-H	No	
15	M	17	Black	C-H	No	
16	F	37	White	S-T	No	
17	F	41	White	S-T	Yes	Scapho-Trapezium
Mean		23,29				

F: Female; M: Male; S-T: luno-triquetrum fusion; C-H: capitate-hamate fusion; E-T: Scapho-trapezium fusion

36 years old white man with non syndromic congenital symptomatic capitate-hamate synostosis with degenerative wrist



Bone fusion between Scaphoid and trapezium. Incipient degenerative changes at scaphoid-trapezium-trapezoid site.



Some reports suggest that some fusion between different rows are more symptomatic^(4,7). In our series one of the two patients with synostosis between the scaphoid and trapezium developed symptoms of pain and stiffness after 28 years of age. The other patient remains asymptomatic at age 39. There are few cases of luno-triquetrum synostosis described as symptomatic. Ritt et al.⁽⁹⁾ reported that to date only 15 cases have been reported as symptomatic. Of the 10 cases evaluated in this study, three have symptoms of pain, stiffness and progressive arthritis. All these patients have more advanced age (mean 41.3 years). Haliloglu and Sahin⁽¹⁰⁾ also note that carpal coalitions can produce degenerative changes in the wrist. Some reports also suggest that symptoms are more related to incomplete fusions^(7,4). However, we found white patients with complete fusions with pain and degenerative wrist disease. In this study we found that all types and sites of congenital nonsyndromic synostosis may cause carpal pain, stiffness and degeneration.

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