

# Wrist Arthrography Study of the Terry-Thomas Sign

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**Background.** Chronic wrist pain is common. The Terry-Thomas sign indicates an interosseous ligament abnormality. The purpose of this study was to evaluate the usefulness of the Terry-Thomas sign for predicting the degree of interosseous ligament tears by means of wrist arthrography.

**Methods.** Wrist arthrography with midcarpal compartment injection was performed on 48 patients with Terry-Thomas sign following its diagnosis by conventional radiography.

**Results.** In our study, 41.7% of cases had tears of the interosseous ligament. However, when we included only patients whose gap between the lunate and the scaphoid bones measured 3 mm or more, the percentage of cases with tears increased to 63.2%. Finally, all patients whose gaps measured 4 mm or more had tears.

**Conclusions.** From the above results, we conclude that the larger the gap between the lunate and scaphoid bones, the higher the incidence of interosseous ligament tears. (**Mid Taiwan J Med** 2001;6:82-6)

## Key words

scapholunate dissociation, Terry-Thomas sign, wrist arthrography

## INTRODUCTION

Scapholunate dissociation is a common form of wrist instability attributed to previous trauma; surgery is often needed.

Scapholunate dissociation is suggested if the Terry-Thomas sign is present. The Terry-Thomas sign, a gap of more than 2 mm between the lunate and the scaphoid bones visualized by postero-anterior projection of wrist radiograph, indicates an abnormality of the scapholunate interosseous ligament [1]. Sometimes we do have cases of intact ligament even when the Terry-Thomas sign is present. However, a wide scapholunate gap is often not significantly reduced even after

surgical repair of the scapholunate ligament [2].

Our aim was to evaluate the role of the Terry-Thomas sign. We hypothesized that the incidence of interosseous ligament tear would be higher if the gap between the lunate and scaphoid bones was more than 4 mm. Therefore, we will attempt to set a standard for the Terry-Thomas sign in order to help differentiate between tears of the interosseous ligament and congenital abnormalities.

Arthrography is a simple and useful technique for evaluating ligamentous tears. Although magnetic resonance imaging serves the same purpose, it is expensive.

## MATERIALS AND METHODS

We selected patients based on the following criteria: 1) patients had a history of wrist trauma; 2) patients experienced wrist

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**Table 1 Arthrographic results of 48 patients with Terry-Thomas sign**

Findings	No of cases (%)
Ligament tear between lunate and scaphoid bone	13 (27.1)
Ligament tear between lunate and triquetral bone	2 (4.2)
1+ tear of triangular fibrocartilage	4 (8.3)
2+ tear of triangular fibrocartilage	1 (2.1)
Capsular tear	3 (6.3)
Normal	25 (52.1)

**Table 2 Arthrographic results of 19 patients with gaps greater than 3 mm**

Findings	No of cases (%)
Ligament tear between lunate and scaphoid bone	8 (42.1)
Ligament tear between lunate and triquetral bone	1 (5.3)
1+ tear of triangular fibrocartilage	3 (15.8)
Capsular tear	2 (10.5)
Normal	5 (26.3)

pain for at least one month after conservative treatment; 3) radiograph of the wrist showed no fracture or osteoarthritis; 4) a gap of more than 2 mm between the lunate and the scaphoid bones was detected.

The scapholunate gap of each patient was measured by conventional postero-anterior radiography of the wrist [3].

Forty-eight patients were selected and underwent wrist arthrography with mid-compartment injection as follows. The radiograph of the wrist was first screened by the author. Then, three milliliters of iopamidol was injected into the mid-carpal compartment under fluoroscopy. Tear of the interosseous ligament between the lunate and the scaphoid bones was diagnosed if there was leakage of contrast medium into the radiocarpal compartment via the scapho-lunate space. If the previous procedure yielded a negative result, it was followed by radio-carpal compartment injection.

There were 18 males (37.5%) and 30 females. The mean age of the patients was 32.2 years old (SD = 8.4). The duration of pain was 7.1 months (range 1-24 months).

## RESULTS

The gaps between the lunate and the scaphoid bones were as follows: 29 cases

(60.4%) were between 2–3 mm; 17 cases (35.4%) were 3–4 mm; 2 cases (4.2%) were 4–5 mm. The results of 48 cases of wrist arthrography are shown in Table 1.

When only those cases with gaps of more than 3 mm were selected, there were only 19 cases (39.6%) in the study group. The results are shown in Table 2.

## DISCUSSION

From an anatomical point of view, the scapholunate and luno-triquetral ligaments are the most important intrinsic ligaments of the wrist and the primary wrist stabilizers [4]. If they tear, dissociation will follow and the patient will have persistent wrist pain. The gap between the interosseous ligaments gradually widens and the Terry-Thomas sign appears.

Scapholunate dissociation is the most frequent serious ligamentous injury of the wrist. If untreated, this injury can lead to disabling wrist pain, reduced mobility and chronic degenerative arthritis [5].

Arthrography is a simple and useful modality to demonstrate disruption of the scapholunate interosseous ligaments [6] and is used for precise determination of post-traumatic interosseous ligament tears [7].

Our study showed that, although all

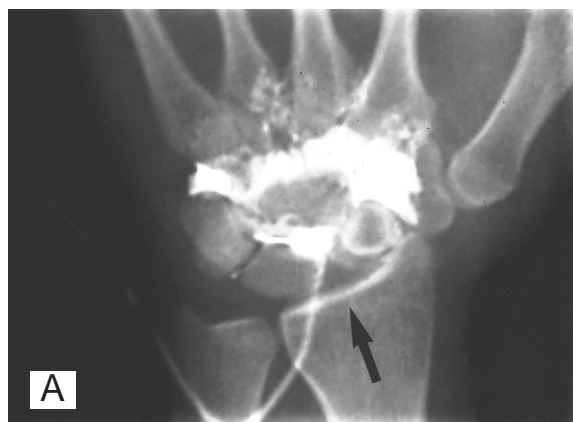


Fig 1 A: radiograph of PA wrist showed widening of the gap between the lunate and scaphoid bones (arrow). B: wrist arthrogram showed leakage of contrast medium between the lunate-scaphoid, indicating possible interosseous ligament tear (arrows).



Fig 2 A: radiograph of PA wrist showed widening of the gap between the lunate and scaphoid bones (arrow). B: wrist arthrogram showed no evidence of leakage between the lunate-scaphoid and lunate-triquetral bones (arrows).

cases had the Terry-Thomas sign, the incidence of interosseous ligament tears was only 41.7%. The reason may be due to the fact that scapholunate dissociation can exist before complete tearing of the interosseous ligaments. Wrist arthrography will usually not reveal partial tears of ligaments; a more sensitive modality may be required. On the other hand, Dr. Casey stated in his study that significant ligamentous damage might be present even on normal radiographs [8].

However, when we excluded those patients with gaps of between 2–3 mm, the total number of patients drops to 19, increasing the percentage of interosseous ligament tears to 63.2% [Figs. 1 A & B]. Still, 7 cases (36.8%) showed no evidence of interosseous ligament tears [Figs. 2 A & B].

When we included only the 2 patients with gaps greater than 4 mm, there was 100% tear of interosseous ligament.

We concluded that the percentage of interosseous ligament tear was not high if the gap between the lunate and the scaphoid bones was 2–3 mm. However, the Terry-Thomas sign is a useful sign for predicting the severity of interosseous ligament tears if the gap between the lunate and the scaphoid is 3 mm or more. The larger the gap, the higher the incidence of tear.

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# 腕關節雙重對比攝影術用於Terry-Thomas Sign 之評估

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**背景** 月-舟狀骨游離是一種常見的引起腕關節不穩定之毛病。一般來說是和創傷有關係，並且可以用手術治療。根據醫學的教科書，腕關節常規素片上顯示Terry-Thomas sign，舟狀骨和月狀骨之關節腔大於2毫米，表示其月-舟肌腱有可能斷裂。腕關節攝影術是一種簡單而且實用的技術，可以得到肌腱斷裂正確之診斷。本研究的目標是要評估之正確性，其準確率有多少。

**方法** 我們於門診病人中，找出48位符合我們標準之病人，包括：1) 腕關節曾經受到創傷，2) 已經接受保守療法，病人仍然感受到腕關節疼痛，3) 沒有其他腕關節炎，4) 舟狀骨和月狀骨之關節腔大於2毫米。

**結果** 在透視X-光下，我們對病人腕關節注射3至4 cc之顯影劑。如果病人之顯影劑能夠從中關節腔(midcarpal compartment)流出到radiocarpal compartment，則可以診斷其為月-舟肌腱斷裂。這些病人需要接受開刀手術治療；在48位病人中，約41.7%肌腱斷裂。其比例並不高，但是如果我們祇收集舟狀骨和月狀骨之關節腔大於3毫米，肌腱斷裂的比例是63.2%，如果關節腔大於4毫米，肌腱斷裂的比例是100%。

**結論** 從以上的結果，我們可以推論舟狀骨和月狀骨之關節腔愈寬，其腕關節肌腱斷裂的機會愈高。(中台灣醫誌 2001;6:82-6)

## 關鍵詞

腕關節相重對比攝影，Terry-Thomas 徵像，月-舟狀骨游離

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