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= Abstract =

Occult Fractures of the Subtalar Joint

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The purpose of the current study was to investigate the results of occult fractures in the subtalar joint which were detected in delay and to find out a way of early detection. The occult osteochondral fractures of the subtalar joint are known to be associated with dislocation and to have a poor prognosis. We treated ten patients who had the occult fractures that were not associated with dislocation. Nine fractures involved posterior facet with a displaced osteochondral fracture. Seven patients lost motion in the subtalar joint completely, and arthrodesis were performed. Three subtalar joints retained some motion and were treated with physiotherapy, which improved the movement and pain. The early detection of fracture was important for the prognosis. We note the "early warning" signs of the patients who have massive swelling without definite bone injury, and who had a failure to regain the subtalar motion after immobilization. The subtalar joint should be imaged with CT or MRI. At first,

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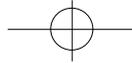
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aggressive physiotherapy should be considered. Arthrodesis should be considered as a final option.

Key Words : Subtalar joint, Occult osteochondral fracture

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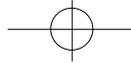
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8.3 가 1/2 (48%-67%) . 10 3 12) , (Table 1), Buckwalter Nancy 4) 5 가 2.5 가 50% 가 1 가 6 가 7 6 Gallie , 1 가 6 3 (Fig 1), 4 1 Gallie (Fig 2), 3 (Fig 3). 50%

Table 1. Subjective and functional assessment of treatment : scoring system used to estimate the results before and after the surgery.

	Excellent 4	Good 3	Fair 2	Poor 1
Subjective				
Pain	none	mild	moderate	severe
Swelling	none/minimal	with exercise	mild with ADL*	moderate/severe
Stiffness	none/minimal	mild deficit	painful deficit	miminal motion
Functional				
Limp	none	slight	moderate	severe(cane/crutch)
Activity	no limits	minor limits	moderate limits	limited ADL

*ADL : activity of daily living

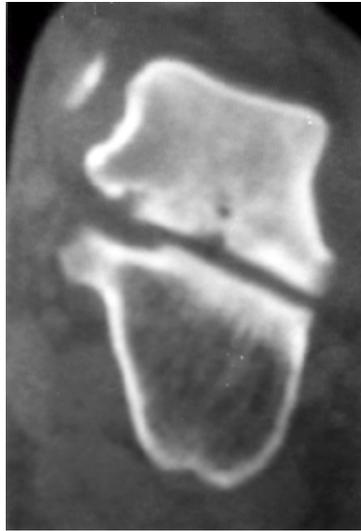
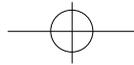


Fig 1. Osteochondral fracture on the articular surface of the talus in the subtalar joint.



Fig 2. Osteocartilagenous loose bodies in the crack which was occurred from the occult fracture in the articular surface of the calcaneus.

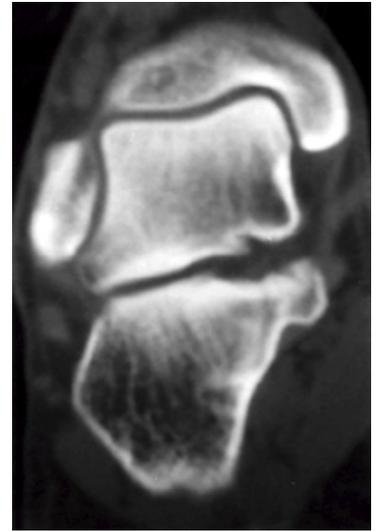


Fig 3. Depression and irregular articular surface in the talus and the calcaneus.



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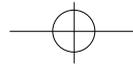


Table 2. The list of the patients who had an occult injury of the subtalar joint.

Age	Sex	Mechanism of injury	Location of pathology	Loss of motion* (pre-post op)	Treatment	Result	
1.	27	F	Fell off horse-twisting	Posterior facet	11%-0%	Gallie fusion	No pain
2.	19	M	Fell off ladder	Posterior facet	0% -0%	Gallie fusion	Mild pain
3.	23	M	Twisting	Posterior facet	11%-0%	Gallie fusion	No pain
4.	21	M	Twisting	Posterior facet	8% -0%	Gallie fusion	No pain
5.	25	F	Injury arresting criminal	Posterior facet	10%-0%	Gallie fusion	No pain
6.	29	F	Fell on ice-twisting	Post & Ant facet	0% -0%	Triple arthrodesis	No pain
7.	26	M	Fell on scaffold-twisting	Posterior facet	7% -0%	Gallie fusion	No pain
8.	32	M	Fell off wall	Posterior facet	56%-88%	Physiotherapy	Mild pain
9.	21	F	Fell in pothole	Sustentaculum talii	67%-76%	Physiotherapy	Mild pain
10.	27	M	Fell off motorcycle-twisting	Posterior facet	48%-68%	Physiotherapy	Mild pain

* Loss of motion: the percentage of range of motion in injured site to healthy site.

Table 3. Preoperative and postoperative scores in patients (n=10).

Grade		Exllent	Good	Fair	Poor
Pain	pre	0	0	3	7
	post	6	4	0	0
Swelling	pre	1	2	5	2
	post	5	3	1	1
Stiffness	pre	0	1	3	6
	post	1	2	0	7
Limp	pre	0	3	4	3
	post	1	4	3	2
Activity	pre	0	0	8	2
	post	1	3	4	2

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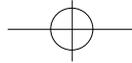
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REFERENCES

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- 1) **Bohay DR and Manoli II A** : Occult fractures following subtalar joint injuries. *Foot Ankle Int*, 17:164-169, 1996.
- 2) **Broden B** : Roentgen examination of the subtaloid joint in fractures of the calcaneus. *Acta Radiol*, 3: 85-91, 1949.
- 3) **Buckingham WW Jr.** : Subtalar dislocation of the foot. *J of Trauma*, 13: 753-765, 1973.
- 4) **Buckwalter JA and Nancy LE** : Athletics and osteoarthritis. *Am J Sports Med*, 25: 873-881, 1997.
- 5) **Cristensen SB, Lorentzen JE, Korgioe O and Sneppen O**: Subtalar dislocation. *Acta Orthop Scand*, 48: 707-711, 1977.
- 6) **DeLee JC and Curtis R** : Subtalar dislocation of the foot. *J Bone Joint Surg*, 64-A : 433-437, 1982.
- 7) **Gallie WE** : Subastragalar arthrodesis in fractures of the os calcis. *J Bone Joint Surg*, 25: 731-736, 1943.
- 8) **Heckman JD** : Fractures and dislocations of the foot. In: Rookwood CA Jr, Green DP, Bucholz RW, Heckman JD ed. *Fracture in adult*. Vol 2. 4th ed. Philadelphia, *Lippincott-Raven Publishers*: 2325, 1996.
- 9) **Isherwood I** : A radiological approach to the subtalar joint. *J Bone Joint Surg*, 43-B: 566-574, 1961.
- 10) **Marymont JV and Mizel MS** : Fracture of the subtalar joint in springboard divers. *Am J Sports Med*, 24: 123-124, 1996.
- 11) **Merchan ECR** : Subtalar dislocations : long-term follow-up of 39 cases. *Injury*, 23 : 97-100, 1982.
- 12) **Ogilvie-Harris DJ and Sekyi-Otu** : Arthroscopic debridement for the osteoarthritic ankle. *Arthroscopy*, 11:433-436, 1995.

