

The Use of *Cissus quadrangularis* in the Management of Left Tibia Fracture: A case report

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ABSTRACT

Objective: The objective of this study was to determine the efficacy of herbal dosage form design for the leg fracture of a young 19 years boy. **Clinical features:** The case include 19 year young boy who presented with leg fractures due to motor bike accident. He suffered from severe pain and was unable to walk. His leg was swollen and he felt pain even to put little pressure on it. He suffered from this ailment since last few months and was taking regular medication but there was no improvement in his symptoms. **Conclusion:** To our experience, the young patients' fracture had speed-up healing while using herbal remedy *Cissus quadrangularis* tablet and lotion for 7-10 days. This might give clue that this herbal remedy not only play a role in pain control, but also to reduce inflammation and as well as accelerate bone healing for certain fracture cases. Further experimental studies are warranted to examine the efficacy of this herbal remedy for healing bone fracture in the different age group patients.

Keywords: *Leg fracture; Cissus quadrangularis; anti-inflammatory; analgesic, anti-infective, bone cementing.*

INTRODUCTION

Around the world herbs are in use for thousands of years to treat several health conditions. One of the herbs that have shown significant beneficial effects on bone healing belongs to the *Cissus* family of plants. *Cissus quadrangularis* is a medicinal herb used as a general analgesic tonic, especially for bone fracture healing, in Ayurvedic medicine since ancient times. [1].

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The plant *C. quadrangularis* contains a high amount of Vitamin C, carotene A, anabolic steroidal substance and calcium. See Table 1 and table 2 for composition of tablet and lotion formulation. Few published study reports favorable effects of this plant on fracture healing in laboratory animals [2-6]. Here we report the case of left leg tibia fracture healing rapidly by treating with herbal remedy. The study performed at Sharafi Hospital Korangi, Karachi, which is a semi-rural primary care center. The leg fractures with motor bike accidents are

growing in megalopolis city of Karachi which stands as the 6th highest density in population in the world.

CASE REPORT

The patient Mr. Shah Waiz is young who presented with leg fractures after falls from motor bike accident and was brought to Accident and Emergency Department, Jinnah Post graduate Medical Centre, Karachi, Pakistan on 18th February 2015. The patient suffered with road accident on motor bike due to one wheeling, very often practiced by the very young boys. The road traffic accident caused trauma to head and the left leg. Blood

pressure noted was 140/80 mmHg. The patient was scanned through the different parts of the body including CT scan right from head to legs, all parts were cleared except the left leg and he was then referred to orthopedics for tibia injury where dressing, suturing and traction was carried out. The x-ray depicted fracture in left leg (Fig 1. X-ray fractured left leg).

He was detained for next 2-3 hours for reassessment. The history and diagnosis done as the H/O RTA, high speed RTA, fall from a height of 3m. GCS noted 13/15 (Glasgow Coma Score, as common after mild CGC 13/15 head injury (47% partials). As the patient suffering



Fig 1. X-ray of fractured left leg tibia.



Fig 2. X-ray of fixator left leg tibia.



Fig.3. Swollen Foot and leg.



Fig 4. Infected left leg.



Fig 5. Swollen leg.



Fig 6. X-ray complete cementing.

from CSO pain, swelling in legs for bone defects, OE swelling (Fig 3-5), tenderness, diffuse – t.l distinct pulse was observed, palpation was carried out on foot ligaments. The patient was referred to vascular surgery, tel# 8(C.L.), departure further marginalized, tibia was adjusted on February 22, 2015 (see x-ray picture III) and injected with R/L IL X4o.

The simple fracture of fibular fracture was adjusted and finally tibia plate was introduced and so the final alignment on the tibia was achieved, with internal fixator distal tibia using locking compression plate bridging the simple fracture (Fig 2 X-ray leg fixator). The fracture position of upper and lower extremities in tissue system was slightly protruding through the skin that caused the swollen in tissues and outer infection as well. The different medicine was prescribed for treatment as Titan(TT, Ceftriaxon), 500mg,I/M, stat, inj; Metacolon (Metronidazol),500 mg, I/V, stat; Tramadol, 100mg, I/V,stat. After these procedures, the patient due to swollen leg and infection consulted and registered with Ali Medical Complex (Ali Hospital) Shahrah-e-Faisal Karachi Pakistan on 20th March 2015, and diagnosed as chronic ostelangeritis and tissue



Fig 7. Leg after complete healing.

pus were sent for C/S. On April 2, 2015, patient contacted Sharafi Goth Hospital where he was treated with herbal medicine for bone joint, swollen legs and infection. He was prescribed and administered *Cissus quadrangularis* dosage form design especially prepared as tablet and lotion for application see table 1 and 2. Within 7 days the swollen leg showed normality in tissues reciprocate and the infection was completely cured (Fig 6-7).

Although the overall pattern of the major fractures had not changed over the years for bone settings, significant changes in the treatment pattern were observed. The changes in treatment pattern with anti-inflammatory and analgesic drugs were also accompanied by a corresponding decrease in the open-reduction rate and hospital stay periods of patients being discharged within 1 day of admission in the 10-year period but the curative function takes longer period of time as shown in different figures.

Cissus quadrangularis was prescribed as tablet 500mg bid for oral administration and lotion was applied twice locally on inflamed area of leg at morning and night and this was repeated

Table 1. COMPOSITION – CISSUS Fracture & Muscle Repair Tablet. Each 500mg film coated tablet contains

S.No.	Using in	INGREDIENTS	Part Used	Qty. /Tablet
01.	Extraction	Cissus quadrangularis – Hattjor		500 mg
EXCIPIENTS				
02.	Wet mixing	Maize Starch		175.0 mg
03.	Wet mixing	Lactose monohydrate		100.0 mg
04.	Wet mixing	Microcrystalline cellulose (Avicel 101)		25.0 mg
05.	Final mixing	Aerosil		5.0 mg
06.	Final mixing	Magnesium Stearate		5.0 mg
07.	Extraction	Sodium benzoate		0.5 mg
08.	Extraction	Potassium sorbate		0.5 mg
FILM COATING MATERIALS				

every day for 7 days. The patient got relief from the pain, inflammation and infection was drastically reduced as nil. The patient was able to walk without any symptoms of leg fracture. Surprisingly, post treatment X-ray report further confirmed the bone was intact compared to previous X-ray picture. Therefore prevention of leg fracture in men may involve early recognition and treatment of both the application and oral dosage form design on the development *Cissus quadrangularis* therapy.

DISCUSSION

Cissus quadrangularis contains vitamins and steroid which a marked influence on the rate of fracture healing by influencing early regeneration of all connective tissues involved in the healing. The acceleration in the fracture healing was related to the stimulation of fibroblasts, chondroblasts and osteoblasts. Also, *C. quadrangularis* builds up muco-

polysachrides, collagen calcium phosphorus leading to quicker mineralization of callus [7]. This case study presented very inspiring outcome by applying this plant product as tablet and lotion for oral and local treatment for leg fracture. Further studies are required at large scale to identify its mechanism and clinical studies are required to prove its efficacy.

C. quadrangularis is known to attenuate bone resorption through the downregulation of pro-inflammatory cytokines. TNF- α , IL-1, IL-6, and IL-11 are known to play a critical role in the bone remodeling process mainly by activation of osteoclasts and increased bone resorption [8]. IL-1 can activate NF- κ B and MAPKs pathway and induce the expression of PGE2 and RANKL in osteoblast which can increase osteoclastic activities [9]. In a previous study, the authors reported significant decreases in the serum levels of TNF- α , IL-1 and IL-6 in C57BL/6 mice after ovariectomy on *C.*

Table 2: COMPOSITION – CISSUS Fracture & Muscle Repair Lotion. Each 500mg Cissus Lotion contains.

S.No.	INGREDIENTS		Qty 580gm	Unit composition
01.	Extraction	Cissus quadrangularis – Hattjor		
02.	Purified water	WATER PHASE	273.15	54.83
03.	Acripal 940	(carbomer 940)	5	1.0
04.	Sodium salicylate		1.5	0.3
05.	Sodium benzoate		1	0.2
06.	Potassium sorbate		0.35	0.27
07.	Cissus extract		125	25
	Glycerin		17.5	3.5
08.	Crodamol CAP		30	6
	Emulsion B1	(Velpo- cs)	10	2
	Crodafos CS 20	Acid	15	3
	DC 200/200	CST Fluid	7.5	1.5
	Cetyl alcohol		7.5	1.5
	TE A		3.5	1.5
	Perfume		3	0.6

quadrangularis diet. And they concluded that *C. quadrangularis* effectively inhibited bone loss in the cancellous and cortical bones in these mice [10].

The role of nutrition in bone healing is the most important factor which influences bone healing. Calcium supplements are effective but increase blood Calcium cannot be achieved just by increasing the intake; the ability of calcium absorption from the intestines is also to be increased. *C. quadrangularis* is reported to increase calcium uptake in animal studies[11]. Other studies reports that *C. quadrangularis* can enhance bone mineralization by accumulating muco-polysaccharides at the site of bone formation [12]. Phytochemical analyses of *C. quadrangularis* show the presence of high

levels of calcium, flavanoids, vitamin C, and β -carotene, and some of these substances are known to possess beneficial properties on bone healing [13].

In conclusion it was very encouraging to note that in the present case study, the patient was prescribed only 1000mg/day of *C. quadrangularis* and he patient was able to walk without any symptoms of leg fracture in very short period of time. Surprisingly, post-treatment radiographic reports showed that the bone was in completely healed. However, more investigations are necessary to elucidate the precise mechanism by which *C. quadrangularis* influences bone metabolism.

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