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**Case report**

# A case report on the effect of *Cissus quadrangularis* on fracture union in 26 years aged man

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## ABSTRACT

Ayurveda the ancient science of medicine describes various herb preparations that achieve the hastening of bone healing. *Cissus quadrangularis Linn*. is an indigenous medicinal plant which belongs to a family of Vitaceae. A case study was undertaken to evaluate the fracture union and effectiveness in reduction of pain and swelling in a 26 year old male with Bennett's fracture. A quick union of fracture was observed within 6 weeks of treatment with *C. quadrangularis.* Post treatment radiographic reports showed united fracture with good amount of callus.

**Keywords:** *Cissus quadrangularis Linn.*, Bennett's fracture, Fracture union

## INTRODUCTION

*Cissus quadrangularis* is a shrub containing high amount of anabolic steroidal substances, calcium, and phosphorus. The extracts from the stem of this plant have been used widely for the early repair of fractures.[1] By toxicological evaluation studies, this extraction is proven to be effective at any higher doses. It has been noted that *C. quandrangularis* has shown marked effectiveness in fracture union and quicker callus formation. The aim of the present case study was to evaluate the effect of *C. quandrangularis* in accelerating union of fracture and reduction in pain and swelling.

## METHODS

A 26 year old male presented with a history of self fall from two wheeler, sustained injury to left thumb and came with complaint of pain and inability to move the same. He was brought to Brindhavvan Areion Hospital, Bangalore. Radiographic examination done on the next day showed Left Bennett's fracture with subluxation. He underwent closed reduction internal fixation (CRIF) with k-wiring under block. He was prescribed with *Cissus quadrangularis* once daily in combination with calcium from the day of surgery.


**Figure 1 (a and b): On day 0, left Bennett's fracture treated with k-wires and minimal gap observed.**


**Figure 2 (a and b): Sixth week follow up X-ray and united fracture with good amount of callus.**

## RESULTS

Pain and swelling gradually reduced and was completely reduced within a week of surgery depicts the Radiography performed at 0th and 6th week of follow up and the X-ray revealed united fracture with good amount of callus (Figure 1 and 2). From our clinical observation, the patient presented a remarkable increase in the rate of fracture union with a decrease in pain and swelling with an oral dosage of *C. quadrangularis* for 6 weeks.

## DISCUSSION

Nutrition supply is an important factor for bone healing. Calcium is one of the substances, which helps in healing of bone, but only increased intake of calcium does not improve the rate of new bone formation. Studies have shown that the ability for absorption and utilization of calcium should be increased to hasten the healing process. *C. quadrangularis* acts by the stimulation of metabolism and increased uptake of the calcium by the osteoblasts in fracture healing. Certain amino acids such as lysine help in absorption of calcium. *C. quadrangularis* also contains vitamin A and C that is effective in the formation of collagen.[1]

It increases the rate of bone regeneration and improves blood circulation and nutrient supply to the bone. It preserves bone tissue anabolism and regeneration and promotes osteoblastic proliferation and differentiation.[2]

A study reported by Arvind et al evaluated the effect of *C. quadrangularis* on bone healing in 80 years aged woman, who had an accidental fall from the stair case at her home and was taken to SMC ortho and trauma care in Chennai, Tamil Nadu, India with the presentation of swelling and pain in left hand wrist in December 2017. Her X-ray revealed colles fracture in left hand. Patient was taken up for closed reduction with pelvic organ prolapse under local anaesthesia. She was advised to take rest and prescribed with a capsule of *C. quadrangularis* along with calcium supplement. Results showed reduction in pain and swelling after 30 days of treatment and radiographic findings showed bone healing on 15$^{th}$ and 30$^{th}$ day of the treatment with *Cissus quadragularis*.[3] Similar results were observed in our study showing good amount of callus formation with reduction in pain and swelling after treatment with *C. quadrangularis*.

*C. quandrangularis* is widely used in treating fractures and is considered as a boon for union/healing.[4] *C. quandrangularis* is extensively used because of its pharmacological actions like analgesic, antiosteoportic on improving bone healing.[5] *C. quadrangularis* has various pharmacological activities like antioxidant, antiulcer, anti-inflammatory, antihaemorrhoidal activities.[6] It has been accepted by WHO for its wide range of clinical activity and its effectiveness.[7]

## CONCLUSION

*Cissus quadrangularis* has been widely used because of its various pharmacological properties in humans with is proven efficacy and safety. It can be used as supplement in various types of fractures for quicker healing with early remodelling of fracture callus. Further studies can be made to evaluate its efficacy in various disorders in different ethnic groups.

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