



## RESEARCH ARTICLE

### DIFFERENCES BETWEEN CONSERVATIVE AND QUIRURGICAL MANAGEMENT (MALONE) OF COLLES FRACTURE

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#### ABSTRACT

Colles fracture is the most common fracture in women middle-aged and elderly as can be seen, the variety of treatments used for resolution highlighting: the conservative surgical technique (percutaneous brads included in the cast) and management. These aspects determined conducting an observational, cross-sectional, retrospective study, where 60 cases were reviewed. Of these, 30 were treated with surgical intervention and 30 with conservative management to establish the most effective, considering the variables of morphology, mobility and pain of the affected upper extremity. The study showed that the surgical method obtained a higher rate of excellent and good results in all the variables analyzed against the conservative method, as well as a lower rate of regular and bad results, concluding that the difference in benefit cost is minimal and best results are obtained.

#### INTRODUCTION

Colles fractures, being one of the most common in our environment, generates considerable expenditure in the social security institutions and treatment varies according to the discretion of each doctor, even though the literature perfectly describes the considerations to follow. With regard to the surgical technique, this is varied, such as: external fixators and osteosynthesis plates, but the cost is high; however, management with percutaneous pinning and include them in plaster reduce the amount of treatment, hospitalization time and therefore the cost-benefit is greater, mainly in public institutions where patient volumes are high.

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#### Scientific background

Fractures of the distal radius are approximately 14% of all fractures (Skinner, Harry 2006) and have been discussed in the surgical literature for more than 200 years. Abraham Colles, Irish surgeon, is accredited in English literature for having described the most common fracture pattern in the distal radius (Bucholz, Robert W. 2005). This was made in 1814 and characterized by displacement of the distal fragment and radial dorsal position with some degree of supination; while the deformity produced is called "on the back of fork." (Skinner, Harry 2005). However, in 1783 this injury was described in France by C. Pateau, a situation which, in European literature is designated under the eponym of "Breaking Pateau-Colles". (Gomar, 1992)

Colles Fracture tend to occur in a bimodal, with a peak associated in children and adolescents as well as older patients. Women are more susceptible to this injury with increasing age, osteoporosis and falls (Wiss, Donald 2006). The results of epidemiological studies show that this type of trauma in young adults has increased due to injury mechanisms high impact (Jupiter J. Singer 1999 and BR. 1998). In more than 90% of cases there is a history of falling on the hand with fingers extended and pronated hand. In classical form, the fracture is cross when viewed from behind and moderately oblique, in the lateral (W Odling, Crockard 1995). The most important features of this fracture are the dorsal and radial displacement of the distal fragment. In the anteroposterior plane, a small lateral component of the force of impact causes radial displacement of the distal fragment. This is inserted into the ulnar styloid by the triangular fibrocartilage, so usually avulsion of the ulnar styloid occurs. Sometimes, the triangular fibrocartilage is broken and in both cases break radioulnar joint bottom occurs. The distal fragment is tilted out, determining an ulnar angulation and is impacted. Another feature is a deformity of rotation or torque is not on the anteroposterior radiograph or lateral. During the Congress of the International Federation of the Society for Surgery of the Hand made in May 1992 in Paris and in July 1995, in Helsinki, respectively; committees bone and joints tried to reach an agreement on which of the classifications should be of common use for all orthopedic world and found that the best acceptance were those of Rayhack, Fernandez and AO system, but despite this the discrepancies remained. Finally, it was agreed that the classification used should include the following aspects: location, configuration, displacement, ulnar styloid integrity, integrity of the distal radial ulnar joint stability, associated injuries and bone mineralization. Therefore, AO classification system modified by Putnam describes different types of fracture, its degree of stability, integrity of the joint and other aspects are taken. The treatment of these fractures can be difficult due to the cancerous nature of the bone, because of its close proximity to the wrist joint, by its intra-articular extension, its association with osteopenia and with advancing age (Ebraheim, Nabil A 2006).

In 1975, Augusto Sarmiento published the method of functional treatment of fractures of the distal radius, arguing that fractures of the distal radius in a high percentage, they lose their reduction and that this phenomenon well explained by the collapse of the cancellous bone is related with disfiguring force exerted by the muscles, especially the brachioradialis muscle, to immobilize the forearm pronated with the wrist in flexion fly. Their studies showed that active early mobilization of joints allows a quick recovery. Nationally there has also been concern about this issue, such as the work published by Dr. Eduardo Bustillo in 1981, which states that at 6 weeks follow-up, more than 30% of the fractures had lost its initial reduction (Marquez Arabia, Henry, 1988), A high percentage of Colles fractures lose the reduction obtained soon. This is attributed to the progressive reduction of edema, plastering and loosens the active hand and elbow movements. But it is also necessary to consider the distorting role of the muscles, principally the brachioradialis muscle displacement of the fracture, one that is inserted into the distal end of the radius below the fracture. Among the main complications of this method are mentioned: Carpal tunnel syndrome, which responds well to conservative treatment; post-traumatic arthritis with inflammatory signs and

pains are soothed with thermotherapy, physiotherapy and rest of the joint; Reflex sympathetic dystrophy: cinesiterapia is avoided by properly applied; Callo vicious: due to poor reduction or a secondary displacement; Lock pronosupination: which, one can intervene surgically alignment of the ulnar head, but then one cinesiterapia very accurate mobilization pronosupination (Rifá Delgado, Eraclius, 1998) will be necessary. One that is rare is the tear of the radial artery, but after checking binds adequate collateral circulation (with a modified Allen test (Deepak Vijay. 2005).

## MATERIALS AND METHODS

This is a case review study, observational, cross-sectional, retrospective that took place in the service of Traumatology and Orthopedics in the Hospital General de Zona No. 1 IMSS "Abraham Azar Farah" of the city of San Francisco de Campeche. It was taken as population 60 patients diagnosed with Colles and divided into two groups, one treated conservatively (braquialmar gypsum) and the other with surgical management. It is indistinct about sex and an age range between 50 and 80 years, these people whose fractures have occurred between January 1 to December 31, 2015 and they have been treated at the site mentioned. In this sense, the medical records were reviewed to execute the selection criteria and thus obtain the required data. the results according to pain, mobility, muscle strength and loss angle shortening or ulnar radio also assessed. (N = 23 to 30 degrees) and finally, was used to measure pain numerical scale. Patients in the 8.9 and 10 scale are bad, 5, 6 and 7 regular, the 4, 3 and 2 good and 1 and 0 excellent. Mobility was assessed according to the mobility of flexo wrist extension being normal dorsiflexion of 0 to 60 degrees, palmar flexion 0-80 degrees, abduction of 0-30 degrees, adduction of 0 to 60 degrees, giving three values each range. When mobility is less than 25% the result is bad, from 25 to 50% is normal, 50 to 75% was considered good and more than 75% was rated as excellent.

Muscle strength was measured according to the scale of Daniela, whose parameters are:

- Uncontracted
- Contraction without movement
- Full movement without opposition or gravity
- Movement can overcome the action of gravity
- Stroke with partial resistance
- With maximum resistance movement

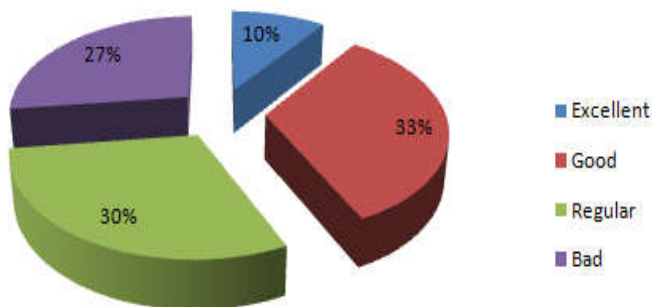
Whereas those obtained from 0 and 1 was considered bad results, qualified within the range of 2, 3 regular, those who obtained 4 shall be deemed qualified well and get 5 excellent range. Moreover, the morphology measured with radiation angle measurement radius ulnar posttreatment end, describing the results as bad if the angulo radioulnar is reversed, regular if the radioulnar angle decreases and good if the radioulnar angle stays. Human resources used during the study were a doctor, methodological advisor and a medical intern; while physical and material resources were made up by clinical records, radiological studies pre and postoperative cabinet, office (white sheets, photocopied material, pens, pencils, eraser, etc.) and computer system and printer; while the costs of this study were funded by the Medical Intern.

**RESULTS**

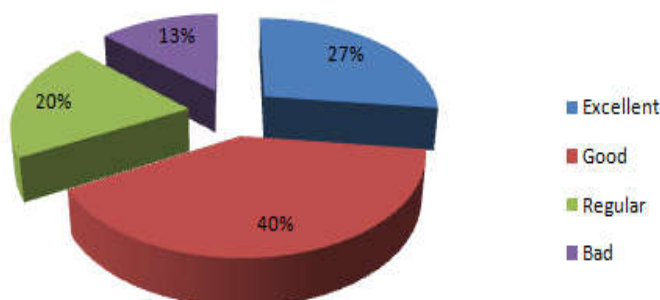
60 patients from January 1 to December 31, 2015 in the General Hospital of Zone Number 1 IMSS with Colles fracture diagnosis were reviewed. No special selection of patients and the decision of both conservative and surgical management was your treating physician. In this regard the execution of this work was by collecting and reviewing the results of those dealings. All cases were acute and the most quickly be attended was in a period of 14 days. The variables analyzed in patients for the next study were pain, mobility, muscle strength and morphology. The ages of the patients analyzed varied between 50 and 80 years. Between 50 and 60 years 8 patients were treated with conservative management and 9 with surgical management. Between 61 and 70 years, 12 patients were treated with conservative management and 15 with surgical management. Between 71 and 80 years, 10 patients were treated with conservative management and 6 with surgical management. (See Annexes - Chart 9) The number of men quantified in this study were 19, of which 9 were treated with conservative management and 10 with surgical management; Likewise, 41 patients were female, and 21 of these were managed with conservative treatment and 20 by surgical technique. (See Annexes - Chart 10) After analyzing the pain variable conservative management we can see that 10% achieved excellent results, 33% good results, 30% fair results and 27% bad results, while patients treated with surgical management 27% obtained excellent result, 40% good result, 20% fair result and 13% bad result. (See Appendices - Figures 1 and 2)

In the mobility variable conservative management in 6% of patients achieved excellent results, good results 30%, 37% and 27% regular results bad results; whereas with surgical management 15% were excellent, 55% good, 18% regular result and 12% bad. (See Appendices - Figures 3 and 4)

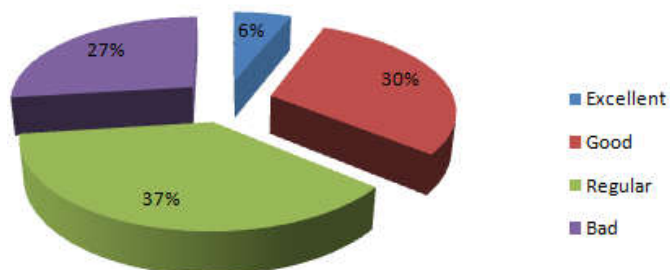
**Graph 1**  
**Conservative Management Pain**



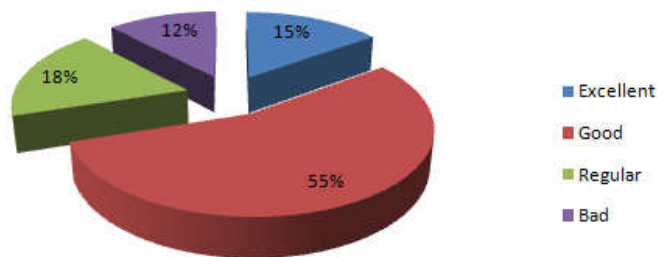
**Graph 2**  
**Surgical Pain Management**



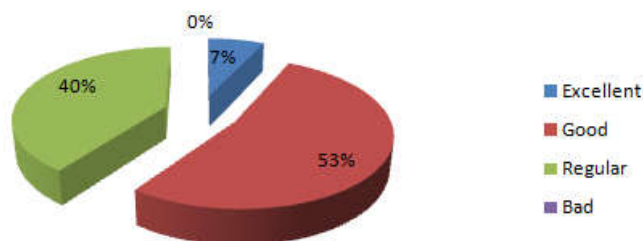
**Graph 3**  
**Movility conservative management**



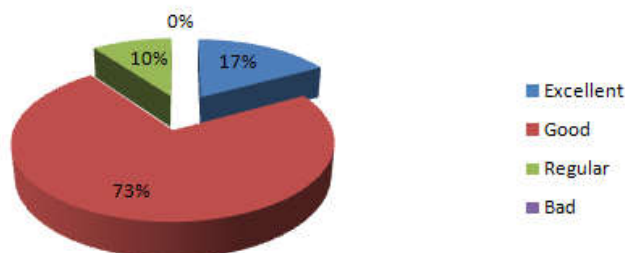
**Graph 4**  
**Movility in the surgical managemet**



**Graph 5**  
**Muscle Strenght in Conservative Management**

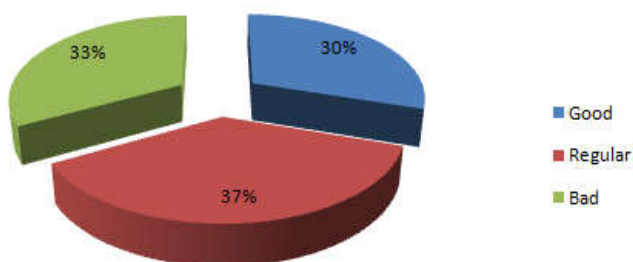


**Graph 6**  
**Muscle Strenght in Surgical Management**

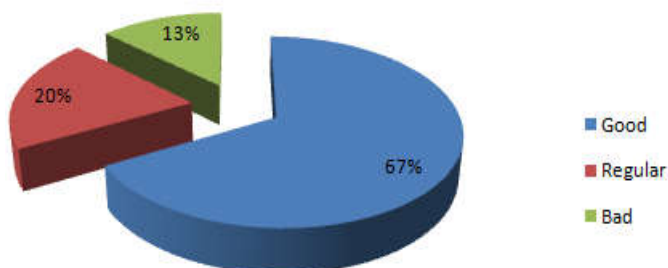


In the musculvariable strength, conservative management in 7% of patients achieved excellent results, 53% good results, 40% regular and 0% bad results; compared to those who received surgical management 17% achieved excellent results, 73% showed good results, 10% were regular results and 0% bad results. (See Appendices - Figures 5 and 6) Finally, the deformity variable, for what they received conservative management, 30% of patients achieved good results, 37% gave consistent results and 33% achieved poor results; whereas with surgical management 67% had good results, 20% fair and 13% poor. (See Appendices - Figures 7 and 8)

**Graph 7**  
**Deformity Conservative Management**

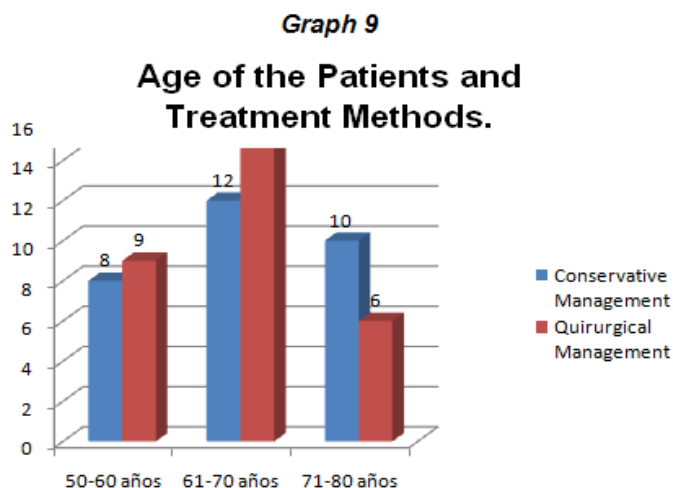


**Graph 8**  
**Deformity surgical management**

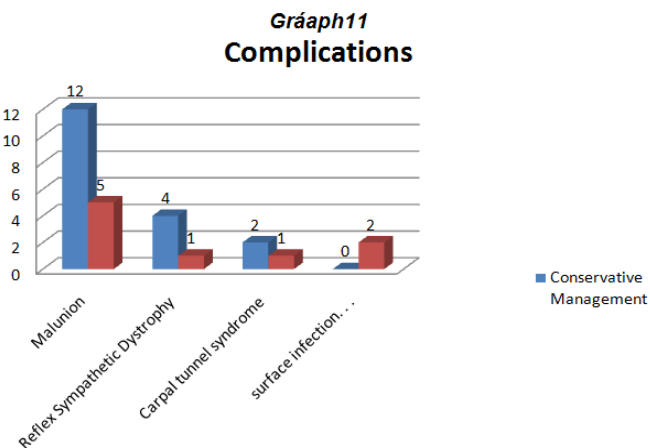
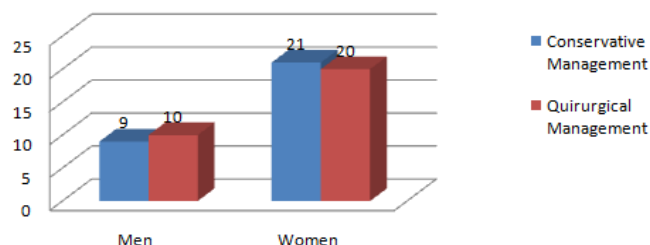


The Colles fractures are one of the most frequent outpatient and emergency services. This condition a special attention in its handling and the highest percentage of these injuries were accidental surface, support level falls both in public and at home. With respect to gender, women predominated over men in a ratio of 2: 1; while those with more than 50 years were observed more frequently these fractures and sites of highest incidence were due to falls at home.

Among the main complications encountered malunion was one of those presented significantly in these lesions, being higher in the managed conservatively and some conditioned ventral compression in the carpal tunnel and therefore compression of the median nerve. Sudeck's disease or fractures is another complication that was seen in 4 patients of managed conservatively and in 1 surgical; In this sense, any patient, even young, who is immobilized for a period of six to eight weeks to develop this complication, but in older people, this occurs more easily. Superficial infection at the entry site of the nails in two patients treated surgically, resolved without complications with daily treatment and the use of antimicrobials for a week. (See Annexes - Chart 11)



**Graph 10**  
**Number and gender of patients who participated in the study.**



**DISCUSSION**

It is not intended to create a new management paradigm Colles fractures in the area of traumatology and orthopedics, as it is not the subject of this investigation; only a small reflection and comparison between two types of management of these lesions in a small universe (General Hospital of Zone no. 1 IMSS Campeche City) is made. The current state of therapeutic management is varied according to age and types of strokes showing fracture. Not to forget the premise that the anatomical restoration of articular surface is necessary, but we must not close to a small incongruity articulate in an older patient with little activity, where a surgical procedure has a high risk, it is not a acceptable result. When a fracture is handled with the conservative method and reduces edema, you may introduce a

shift that produces the need for a surgical approach, so that invoices handled with plaster must be checked the next day, a week and 14 days. With respect to sex and age groups, in world literature as well as other publications such as the Latin American Society of Orthopaedics jobs women have more cases and peaks of higher incidence occur between 6 and 10 years, and in the seventh decade of life (www.monografias.com/trabajos-pdf2/consenso-manejo-fracturasosteoporotic fracture). In our study, only patients of the sixth, seventh and eighth decade of life were studied. Regarding muscular strength, other studies reported a 54 and 90%, while our average was 75%. In the percentage of complications on similar studies, they reported a 27% highlighting the track infection, osteomyelitis, sympathetic atrophy reflects loosening of the nails, and iatrogenic fractures. In this paper, the percentage was slightly higher, with 30% (See annex). Internal fixation with plates and screws is a method that gives more satisfactory final results with 80% of suitable functional results and 93% satisfactory anatomical results, although all lose some mobility, mean grip strength according to the Latin American Society of Orthopedics and Traumatology, was 86% against 75% of ours. However, it is a method that we are not analyzed in this study and landing him in our day- increase costs in bed as well as implants.

## Conclusion

By the results we can see that patients treated with the surgical method performed better than those treated conservatively, which means that this condition should be treated with the first method in all cases, because the results are more satisfactory for patients. The Colles fracture is a very common condition in the elderly and leaves important consequences if proper treatment is not decided, and most of the complications presented are secondary to the age of patients. In practice, we note that there is no protocol management of these lesions and it depends on the decision of the treating physician.

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