
Integrative rehabilitation of post Open reduction internal fixation [ORIF] scapular body and Glenoid fracture - A Single Case study**Dasari Sri Lakshmi**

Ayurvedic Physician and Physiotherapist, SGS Hospital, Sri Ganapathy Sachchidananda Ashram, Mysuru-570025, India

Abstract:

Fracture is discontinuation of bone commonly accompanied by soft tissue damage due to external trauma/force. A 40 years old person met with road traffic accident (RTA), a hit and run by bus, hence had fracture scapular body and glenoid left shoulder. Open reduction internal fixation (ORIF) was done with recon plate. Physiotherapy was started two and half months post-operatively considering patient's other injuries. Patient continued Physiotherapy and came to SGS Hospital five months after operation. Patient's active range of motion (ROM) of shoulder was restricted to 90° of flexion and 65° of abduction. Therefore, considering muscle strength and joint mobility Ayurveda treatments, *sthanika abhyanga* (SA) with equal quantity of *Maha Masha Taila* and *Prasarinayadi Taila* (name of Ayurvedic oils) and *shashtika shali pinda sweda* (SSPS) processed with *Ashwagandha churna* (*Withania somnifera* Dunal.) and *Bala churna* (*Sida cordifolia* Linn.) were done for 10 days. Aiming at improvement in muscle strength *bruhmana* (nourishing) *bahyopakramas* (external modality of treatments) were selected. ORIF was done; hence only active assisted and active exercises were encouraged. One more week of exercise therapy was continued and there was appreciable improvement in shoulder muscle strength and active ROM. In this paper neoteric integrative approach of Ayurveda and Physiotherapy treatments of one session for ORIF fracture are presented.

Key Words: Ayurveda, open reduction internal fixation (ORIF), *sthanika abhyanga*, *shashtika shali pinda sweda*

Received: 22.01.2020

Revised: 16.02.2020

Accepted: 08.03.2020

Quick Response code***CORRESPONDING AUTHOR:****Dr. Dasari Sri Lakshmi**

Ayurvedic Physician and Physiotherapist, SGS Hospital, Sri Ganapathy Sachchidananda Ashram, Mysuru, India

Email: drdasari24@gmail.com

Introduction:

A fracture can be a complete break in the continuity of a bone or it may be an incomplete break or crack. Fractures caused by sudden injury occur though bone that was previously free from disease, such fractures may be caused by direct or indirect violence.^[1] Physiotherapy in its various forms occupies an important place in the non-operative and post-operative rehabilitation of fractures.^[2] For ORIF cases only exercises (Physiotherapy) are indicated, but an attempt is made with Ayurveda treatment along with Physiotherapy. These were selected as treatment of choice, to obtain cumulative effect of both the systems of medicine. Since Physiotherapy includes external treatment, hence only *bahyopakramas* were selected in Indian traditional system too to enhance speedy recovery.

Case History:

A 40 years aged person met with road traffic accident (RTA), person was pillion rider of two wheeler who had a hit and run by a bus. Patient had swelling and tenderness over left shoulder due to fracture scapular body and glenoid left shoulder. Patient underwent ORIF with recon plate fixation on 23rd august 2019. Post-operatively patient was treated with IV fluids, IV antibiotics, analgesics and other supportive medications. Post-operative period was uneventful and was discharged on 27th august 2019. Patient was discharged with review period of one week if there would be no complaints of pain, fever, soakage and bleeding at surgical site.

On Examination:

Patient with above history was examined; active movements of shoulder were restricted with flexion and abduction of 90° and 65° respectively. Active assisted either wall climbing or shoulder flexion by clasping both hands together was greater than active range. Patient had difficulty in raising and holding the limb in flexed or abducted positions. Patient had muscle weakness and hence patient was finding it difficult to raise left hand rather than pain. Muscle strength was not sufficient to hold the hand against gravity for a while actively where as active assisted was possible with ease for the same range of motion. Muscle that support various shoulder movements are enumerated in Table-1. The weaker scapular and arm muscles that bring about shoulder joint movements were addressed for treatment.^[3-5]

Past history:

After post-operative Physiotherapy there was improvement and patient was able to lift up to 90° and 65° actively of flexion and abduction respectively. But however, beyond that improvement was much slowed and finding difficult to execute active movements beyond above mentioned ranges, affecting daily activity. After couple of weeks of stasis in improvement with only Physiotherapy, patient approached Department of Physiotherapy, SGS Hospital.

INTERNATIONAL JOURNAL OF AYUSH CASE REPORTS (IJA CARE)

Procedures administered to the patient:

Patient was treated with a total number of 10 and 10 sittings/number of days of treatment, each of Ayurvedic and Physiotherapy treatments respectively, as one session. *Bahyopakrama* was done for 10 days, last 3 days was combined with Ayurveda and Physiotherapy later 7 days was followed by one more week of Physiotherapy alone. Hence a total of 10 days of Ayurvedic treatment and 10 days of Physiotherapy were done. Physiotherapy included active and active assisted exercises. Active exercises of shoulder were done that

included shoulder flexion and abduction in lying down posture for 20 repetitions of each exercise per day. Flexion, extension, abduction, internal and external rotation movements were also encouraged in sitting posture for 20 repetitions of each exercise per day. Active assisted exercises included wall climbing, shoulder pulley to improve range of shoulder flexion and abduction. To improve the range of internal rotation along with support of right hand and towel were encouraged; shoulder wheel to assist active shoulder circumduction. The details of the procedures are described in Table-2.^[7-10]

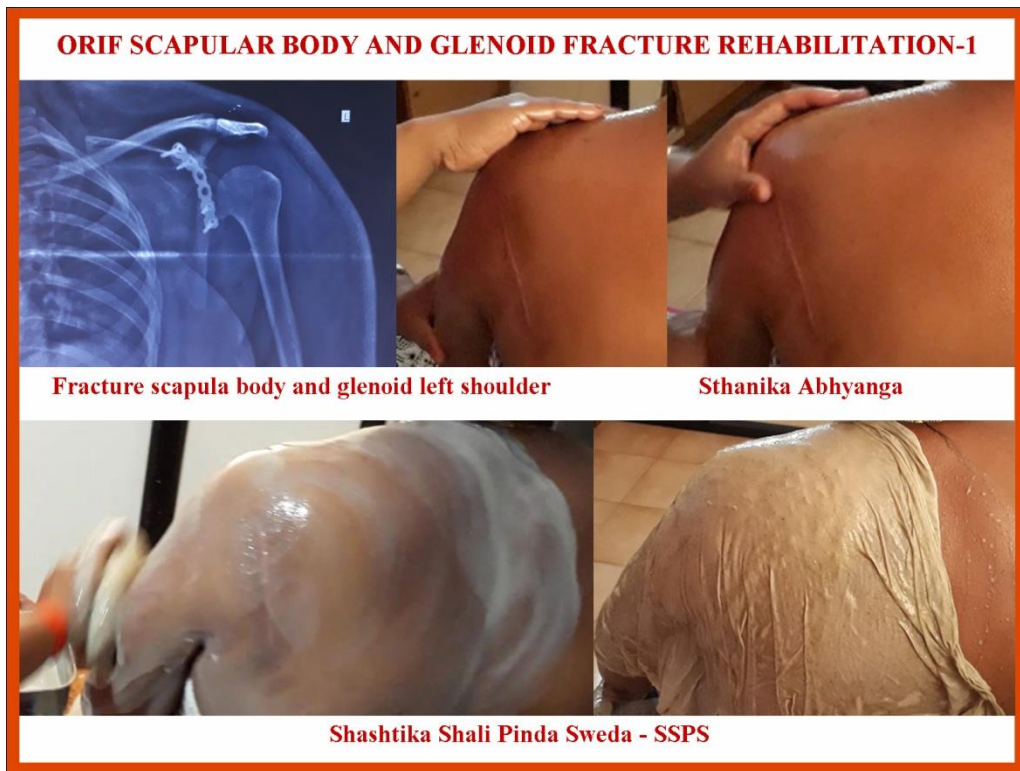


Fig-1: Ayurveda treatment - SSPS



Fig-2: ROM before and after integrative treatment.

Table -1: Muscles involved in movements of shoulder.

Movement	Muscles
Scapular retraction/adduction	Rhomboideus major, Rhomboideus minor, and Trapezius
Scapular protraction/abduction	Serratus anterior (prime mover), pectoralis minor and pectoralis major
Scapular elevation	Levator scapulae, upper fibers trapezius
Scapular depression	Pectoralis minor, lower fibers trapezius, subclavius, latissimus dorsi
Arm abduction	Supraspinatus (first 15°), deltoid and scapular protractor muscles
Arm adduction	Scapular depressors, latissimus dorsi, subscapularis, teres major and minor, infraspinatus, pectoralis major, long head of triceps, coracobrachialis.
Arm flexion	Pectoralis major, coracobrachialis, biceps brachii, anterior fibers of deltoid
Arm extension	Latissimus dorsi and teres major, long head of triceps, posterior fibers of deltoid
Arm circumduction	Pectoralis major, subscapularis, coracobrachialis, biceps brachii, supraspinatus, deltoid, latissimus dorsi, teres major and minor, infraspinatus, long head of triceps

Table- 2: Procedure of integrative medicine:

Treatment Modalities	Duration	Procedures followed
Ayurvedic treatment – <i>Bahyopakrama Abhyanga</i>	1 st -10 th days	Application with equal quantities of <i>Maha Masha Taila</i> and <i>Prasarinyadi Taila</i> to left half of trapezius, shoulder and arm up to elbow for 15 minutes. Then followed by SSPS.
<i>Shastika Shali Pinda Sweda</i> (SSPS)	1 st -10 th days	<i>Shastikashali</i> was processed in <i>Ksheera</i> with equal quantities of <i>Bala Churna</i> and <i>Ashwagandha Churna</i> . SSPS was done over above mentioned affected areas gently and repeatedly for 20 minutes.
Physiotherapy	8 th -10 th days	Active and active assisted exercises of shoulder were encouraged followed by Ayurveda treatments.
Physiotherapy	11 th -17 th days	Only active exercises to improve strength and maintain improved strength.

Table -3: Improvement with integrative rehabilitation:

Treatments	Other symptoms	Active ROM
Before treatment	<ul style="list-style-type: none"> Weakness Restriction during shoulder movements in the mid-arm area. Reduced shoulder and scapular movements while overhead active assisted movements. 	<ul style="list-style-type: none"> Flexion-90° Abduction-65° Restricted circumduction (involving internal and external shoulder rotation)
After completion of Ayurveda treatment	<ul style="list-style-type: none"> Improved shoulder muscle strength. Reduced restriction in mid-arm area. 	<ul style="list-style-type: none"> Flexion-135° Abduction-120°
Only Physiotherapy	<ul style="list-style-type: none"> Scapular movements are associated with shoulder movements which were earlier not associated. 	<ul style="list-style-type: none"> Flexion-full and free along with ½ KG weight. Abduction- full and free along with ½ KG weight. Able to do circumduction.

Results and Discussion:

With first seven days of Ayurveda treatment (Plate -1) muscle power was improved hence from 8th day Physiotherapy was started. Henceforth to retain, further improve muscle strength and active joint mobility; active assisted exercises and active were encouraged. Next one week was followed by Physiotherapy exercises and muscle power was further improved. Patient could do over head flexion and abduction holding ½ KG dumbbell. Circumduction and internal rotation were also done with ease after treatment. Integrative treatment design (Table-2) and results are explained in detail in Table-3 and Plate-2.

Generally, fractures of scapula recover faster with Physiotherapy exercises. Early mobilization is the keynote to the treatment of scapula fractures to prevent development of a stiff shoulder. Complications can lead to restricted range of movement in shoulder girdle or shoulder joint and muscle weakness. Movements should be started as soon as the pain has decreased enough to allow the patient to move. Treatment should always be geared to functional movements so that the patient may become independent as soon as possible.^[2] According to Ayurveda this case can be categorized as *Abhighataja janya* (traumatic origin) *apatarpana vyadhi* (disease leading to depriving). *Vata Dosha* is vitiated due to impact of *abhighataja* on *asthi dhathu* (bone) resulting in *mamsa dhatu kshaya* (emaciation/weakness of muscles).^[6] As per Charaka and Vagbhata Acharyas, diseases are broadly classified into two types namely *santarpana janya* (diseases caused due to

excessive nourishment) and *apatarpana janya vyadhis* (diseases caused due to depriving). *Brumhana* (nourishing) and *langhana* (lightening/depriving) are two types of treatments to combat the two types of disease categories. Choice of treatment is opposite in nature to that of disease i.e. *apatarpana* for *santarpana* and vice versa.^[7-10]

In this case weakness of left shoulder and scapular muscles is due to *ksheena guna* of vitiated *vata dosha*. Hence *santarpana* and *vatahara* line of treatment was selected. To address *ksheenatva* of *mamsa dhatu* and *vata dosha*, equal quantity of *Maha Masha Taila* (MMT)^[11] and *Prasarinyadi Taila* (PT)^[12] *Abhyanga* and SSPS were selected.

MMT and PT have *santarpana guna* and are indicated for *balya* (nourishing) and *vatahara* (mitigating *vata dosha*). *Abhyanga* mitigates *vata dosha* (*vatahara*), promotes strength (*pushtikara*), sleep (*swapna*) and stoutening (*bhruhatwakrit*). Milk (*ksheera*) has heavy (*guru*), unctuous qualities (*snigdha gunas*) and acts as strengthening (*balya*), enlivening (*jeevaniya*, rejuvenating (*rasayana*), aphrodisiac (*vrishya*) and cognitive enhancer (*medhya*). *Shashtikashali* is best among *shali*, strengthening (*balya*), complexion enhancer (*varnya*) and alleviation of three doshas (*tridoshahara*).^[10] *Ashwagandha churna* (*Withania somnifera* Dunal.) and *Bala churna* (*Sida cordifolia* Linn.) has heavy (*guru*), unctuous (*snigdha*) and *pichchila gunas*, with strengthening (*balya*) and elimination of excessive *vata dosha* (*vatahara*) actions.^[11] *Ashwagandha churna* and *Bala churna* were processed with milk (*ksheera*) to improve muscle bulk and

strength. *Shastikashali* was cooked very soft and *pottali* was prepared. With above *ksheera yukta Bala mula and Ashwagandha churna* was used to dip and do the *Pinda Sweda*. *Pottali* was gently moved in *anuloma gati* (downwards/away from body). Considering the *dosha* and *dhatu* involvement, *Abhyanga* and SSPS were performed in *anuloma gati* as instructed in classics for *vata niyantrana*. All *dravyas* are *santarpana* in nature and *vata hara*, to bring about cumulative effect in improving the condition.

Physical Therapy/Physiotherapy as the name suggests, all treatment modalities are given externally or physically to maintain physical health. As this was a case of ORIF care was taken that direct pressure was not exerted or patient was not forced for any movements passively. Undue excessive force can affect the internal fixation; care was taken while *Abhyanga* and SSPS treatments were given gently without pressure. With Ayurveda treatment muscle power was improved and patient could do exercises with ease without feeling of any restriction in shoulder and arm. Only active exercises and active assisted with patient's other hand or other exercises where in patient took support of equipments like shoulder pulley, shoulder wheel or wall were practiced during the treatment duration. These equipments assist patient to continue active exercise with support and thus above equipments aided in active assisted exercises. Exercises were not started from 1st day of treatment since patient movements were restricted, hence were started on 8th day of treatment. Muscle strengthening exercises would take time

therefore next one week was continued with exercises to retain and improve strength further that was gained from Ayurveda treatments. *Santarpana Bahyopakramas* were selected as treatment for this case, so that the route of administration is external in both the systems of medicine to enhance the cumulative effects. These treatments facilitated faster recovery by strengthening all muscles that help in active shoulder movements to carry out unhindered daily activities of life.

Acknowledgement:

Author is thankful to Dr. Sri Ganapathy Sachchidananda Swamiji and Sri Datta Vijayananda Teertha Swamiji for giving an opportunity to conduct this study in their institution, SGS Hospital. Special thanks to Dr. Saritha Swarna Prasad and Dr. P.V. Phani Shree for their expertise support.

References:

1. Adams JC, David L. Hamblen; Outline of fractures, Chapter-1, Pathology of fracture and fracture healing, Printed and bounded in Great Britain by William Clowes Ltd, Beccles and London; 10th edition 1991; Page no-3.
2. John Crawford Adams, David L. Hamblen; Outline of orthopaedics, Chapter-1, Diagnosis of orthopaedic disorders, Printed and bounded in Great Britain by William Clowes Ltd, Beccles and London; 11th edition 1990; Page no-22.
3. M. Dena Gardiner, The Principles of Exercise Therapy, Chapter-3, CBS Publishers & Distributors, Delhi, An

- introduction to exercise therapy; First Indian edition 1985; Page no-29.
4. B.T. O'Connor, edited by Patricia A. Downie, Cash's textbook of Orthopaedics and Rheumatology for Physiotherapists, Chapter-23, Fractures and Chapter-24, Physiotherapy and Charts of fracture management, First Indian Edition, P.L Printers, R.P Bhag, Delhi; 1993; Page no-451-511.
 5. Ann Thomson, Alison Skinner, Joan Piercy, Tidy's Physiotherapy, Chapter-3, Fractures; Varghese Publishing House, Mumbai, 12th edition reprinted 1995; Page no-19-32.
 6. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsa Sthan, Vata Vyadhi Adhyaya, 28/33, edited by R.K Sharma Bhagwan Dash and Dr. Ram Karan Sharma, Chaukhambha Sanskrit Series office, Varanasi; 13th edition reprint 2002; Page no-29.
 7. Vagbhata, Ashtanga Sangraha, Sutra Sthan, Dvidividhopakramaneeya Adhyaya, 22/ 2-4, Vol-I edited by Prof K.R. Srikantha Murthy, Chaukhambha Orientalia, Varanasi; 2nd edition 1998; Page no-421-423.
 8. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Sutra Sthan, Langhanabhrumhaneeya Adhyaya, 22/10, 13 edited by R.K Sharma Bhagwan Dash and Dr. Ram Karan Sharma, Chaukhambha Sanskrit Series office, Varanasi; edition reprint 2002; Page no-388-389.
 9. Vagbhata, Ashtanga Sangraha, Sutra Sthan, Dinacharya 3/20, Vol-I edited by Prof K.R. Srikantha Murthy, Chaukhambha Orientalia, Varanasi; 2nd edition 1998; Page no-42.
 10. Bhavamishra, Bhavaprakasha, Part-I, Dugdha varga Adhyaya, 14/8-9, edited by Sri Brahma Shankar Mishra and Sri Roopa Lalaji Vaishya, Chaukamba Sanskrit Bhavan, Varanasi, edition 2012; Page no-759.
 11. Govinda Das, Edited by Kaviraja Shri Ambikadatta Shastri Ayurvedacharya, Bhaishajyaratnavali, Chaukamba Prakashan, Varanas, 20th edition 2010, Page no-583.
 12. Dr. K. Nishteswar and Dr. R. Vidyanath, Sahasrayogam, Chaukamba Sanskrit series office, Varanasi, edition 2012; Page no-153.
- Conflict of interest:** Author declares that there is no conflict of interest.
- Source of support:** None
- How to cite this article:**
- Dasari S L, Integrative rehabilitation of post Open reduction internal fixation [ORIF] scapular body and Glenoid fracture - A Single Case study Int. J. AYUSH CaRe. 2020; 4(1):21-28.