Shoulder Hemi-arthroplasty (Trauma)

Sling	What can I do from day 1?	Restrictions?	Commence strengthening?
Trauma: Up to 6 weeks	Active assisted/active supported within safe zone* Mobilise unaffected joints e.g elbow/ wrist/hand/ Cx sp/ sh girdle	ER beyond safe zone for 6 weeks Hand behind back/extension 6 weeks Resisted IR for 6 Weeks Push up through arm e.g. getting out of a chair	Dependent on dynamic control ROM, and pain resolution: Dependent on confirmation tuberosity fixation but generally between 6 and12 weeks

* *Safe zone will be stipulated by the Surgeon in the operation notes. If for any reason it is not then limit elevation to anterior to the scapula plane below 80° and 0° of ER (respecting pain and movement pattern). It is imperative to confirm the safe zone with the Surgeon at the earliest opportunity.*

Treatment Note: *In Trauma cases protection of the tuberosities is essential as good fixation correlates with good outcomes. Following repair of the tuberosities the surgeon will determine the range within which tension on the tuberosity repair is kept to a minimum and therefore identify the safe zone for postoperative rehabilitation.*

Pre-operatively

- Teach active assisted mobilisation programme
- Advice re postural awareness / movement pattern correction
- Patient education regarding procedure and expectations
- Check re compensatory muscle patterns
- Educate re ADL/Sleeping positions/ Sling management
- Occupational Therapy assessment to consider care needs post-operatively

Factors that may affect progression rate and outcome;

- Pre-operative status
- Age
- Co-morbidity
- Status of rotator cuff
- Greater tuberosity fixation/reconstruction

It is important to remember that the primary indication for this procedure is pain relief- any improvement in functional range of movement will be dependent on the status of the rotator cuff and indications for surgery.

Protective phase (0- 3 weeks[1])

[1]Timescales are general guidelines and are dependent on pre-operative functional level, status of the rotator cuff and co-morbidities. Pre-operative assessment is an essential component of establishing those patients who should have limited goals.

Avoid:

- **X** End range forced passive external rotation(**note safe zone)**
- **X** Extension/Hand behind back
- **X** Combined abduction/external rotation(until 6 weeks)
- **X** Weight bearing through operated arm e.g. getting out of a chair
- **X** Lifting (limit to cup/ eating utensils/toothbrush/newspaper)
- **X** Resisted internal rotation (for first 6 weeks)

Sling

The sling is worn for comfort and to protect the tuberosity fixation. Patients usually wear the sling for 3 weeks until post-operative pain starts to settle. However in the case of fracture or poor cuff function patients may wear the sling for up to 6 weeks. The sling is removed to allow axillary hygiene and when the patient is doing their exercises. It should be worn for comfort at night and to maintain the arm in a protected position. Patients are also advised to sleep with a pillow behind their arm to prevent their arm falling into hyper-extension.

It is advisable for patients to wear the sling when they are out in crowds to avoid the arm being knocked in the first 4-6 weeks post-operatively.

Patients are seen by the Occupational Therapy team whilst on the ward with regard to reassessing activities of daily living and ensuring effective discharge planning.

Goals:

- Protect the prosthesis
- Allow healing of soft tissues
- Diminish pain and inflammation
- Regain active assisted range of movement
- Prevent/minimise muscle inhibition
- Prevent compensatory movement patterns that may compromise recovery
- Promote independence with ADL with modifications whilst maintaining integrity of replaced joint

Rehabilitation

- Active elbow, wrist and hand exercises
- Active assisted i.e. supported mobilisation within safe zone (e.g. ball rolls, table slides etc.)Note: Can do active supported ER but only within range obtained at surgery. If this is not clear then work to neutral and never force passively.

- Simple Scapula mobilisation exercises e.g. shoulder shrugs
- Consider cuff compensation exercises according to pain
- Gentle isometrics rotator cuff (<30% MVC) except for internal rotation
- Movement pattern correction
- Encourage use of hand in sling (limit to cup/ eating/utensils/toothbrush Newspaper)
- Reinforce pre-operative education regarding positioning and joint protection
- Cryo-therapy if tolerated
- Wean off sling at 3/52

Criteria for progression:

- Pain controlled
- No signs of instability
- Good isometric contraction rotator cuff
- Integrity subscapularis

Treatment Notes: *Research demonstrates that patients that engage with the hand of the operated arm, during the immobilisation phase, have better outcomes in terms of pain and function.*

The principles of cross-education can be used early in the rehabilitation phase. Isometrics targeting the rotator cuff of the un-operated arm e.g. external & internal rotation with the arm supported at 30 degrees of abduction in the scapula plane will help facilitate muscle activation patterns and cortical activation together with small strength gains in the operated limb.

Intermediate stage (3-6 weeks[1])

Treatment Note: *Prosthesis position/tuberosity fixation will be checked at clinic follow up by radiological evaluation. It is essential to check greater tuberosity fixation with appropriate imaging prior to commencing specific supraspinatus strengthening.*

Avoid:

- **X** End range forced passive external rotation (**note safe zone)**
- **X** Forced extension/Hand behind back
- **X** Combined abduction/external rotation
- **X** Weight bearing
- **X** Lifting (limit to cup/ eating utensils/toothbrush/newspaper)
- **X** Resisted internal rotation (for first 6 week through operated arm e.g. getting out of a chair

Goals:

- Regain active range of movement shoulder girdle/glenohumeral joint
- Control pain and inflammation
- Optimise dynamic control through range
- Prevent compensatory movement patterns that may compromise recovery
- Avoid overstressing healing tissue
- Increase functional independence

Rehabilitation:

- Continue scapula dissociation/mobilisation exercises if indicated
- Active assisted to active GHJ movement through range i.e. no elevation restrictions*
- Functional extension and hand behind back from 4 weeks (do not force)*
- Continue supported upper limb work until good control regained
- Encourage increasing functional activity at waist height (and above if able)- light tasks*
- Continue gentle isometrics rotator cuff (<30% MVC) inclusive of subscapularis from 4 weeks

Criteria for progression:

- Pain free well controlled functional range of movement
- Rotator cuff/scapula function through available range
- Active external rotation control
- No signs of instability of prosthesis
- Functioning subscapularis with limb load

Late stage (6weeks +[1])

Avoid:

- **X** Weight bearing through arm in extension
- **X** Heavy lifting
- **X** Forced internal rotation against resistance
- **X** Forced external rotation
- **X** Forced extension/hand behind back
- **X** Combined abduction/external rotation

Aims:

- Rehabilitate function specific strength and endurance (gentle cuff strengthening generally from 8 weeks)
- Transference movement pattern correction to functional tasks
- Optimise deltoid function
- Aid functional independence

Rehabilitation:

- Introduce gentle rotator cuff resistance exercises (if good cuff status) according to functional demands through range from 8 weeks
- If cuff function poor may benefit from cuff compensation type exercises
- Increase functional use of arm (respecting control/load/fatigue)
- Functional movement pattern re-education specific to patients functional demands
- Consider functional rehabilitation with Occupational Therapist if struggling to progress / specific functional demands

Remember patients will gain their maximum improvement in 1 year but can continue to improve for up to 2 years post-operatively so will need to be motivated to continue their home exercise programme.

Expected Outcomes

These reported outcomes are derived from a review of recent literature of hemiarthoplasty following fracture. The quality of literature is insufficient to draw an unequivocal conclusion as to what the expected course of outcome is, however the findings do suggest some typical patterns in recovery.

OUTCOME	Acute Trauma Procedures		
Functional Scores:	**Constant Score**		
Total	**55.05**		
ROM	**Flexion**	**Abduction**	**External Rotation**
Total	**90^{o}**	**79^{o}**	**29^{o}**
Pain Scores	**2.6/10**		
Patient Satisfaction	**82.4%**		