



# Decompressive Craniectomy for Malignant Middle Cerebral Artery Infarction: Local Experience from Two Tertiary Care Centre

**Afnan Samman, MBBS**  
**Prof. Saleh Baesa, MBChB, FRCSC**  
**King Abdulaziz University Hospital**  
**Jeddah, Saudi Arabia**

# Disclosure

- **No disclosures**

# Background

- Malignant middle cerebral artery infarction is known to be associated with significant rates of mortality and morbidity.
- Early death is thought to result from massive edema causing trans-tentorial herniation.
- As edema propagates, it causes secondary ischemia extending to one or more other vascular territory, deleteriously influencing patient's prognosis.
- Decompressive hemicraniectomy has been shown to significantly decrease mortality associated with malignant post ischemic edema, specially when addressed earlier.

# Objective

- This study was undertaken to assess our preliminary experience with decompressive hemicraniectomy for malignant MCA stroke in two tertiary centers in western Saudi Arabia.

# Clinical Materials and Methods

- A retrospective study
- Between Nov 2010 - Dec 2015
- Experience of two centers in Jeddah



# Clinical Materials and Methods

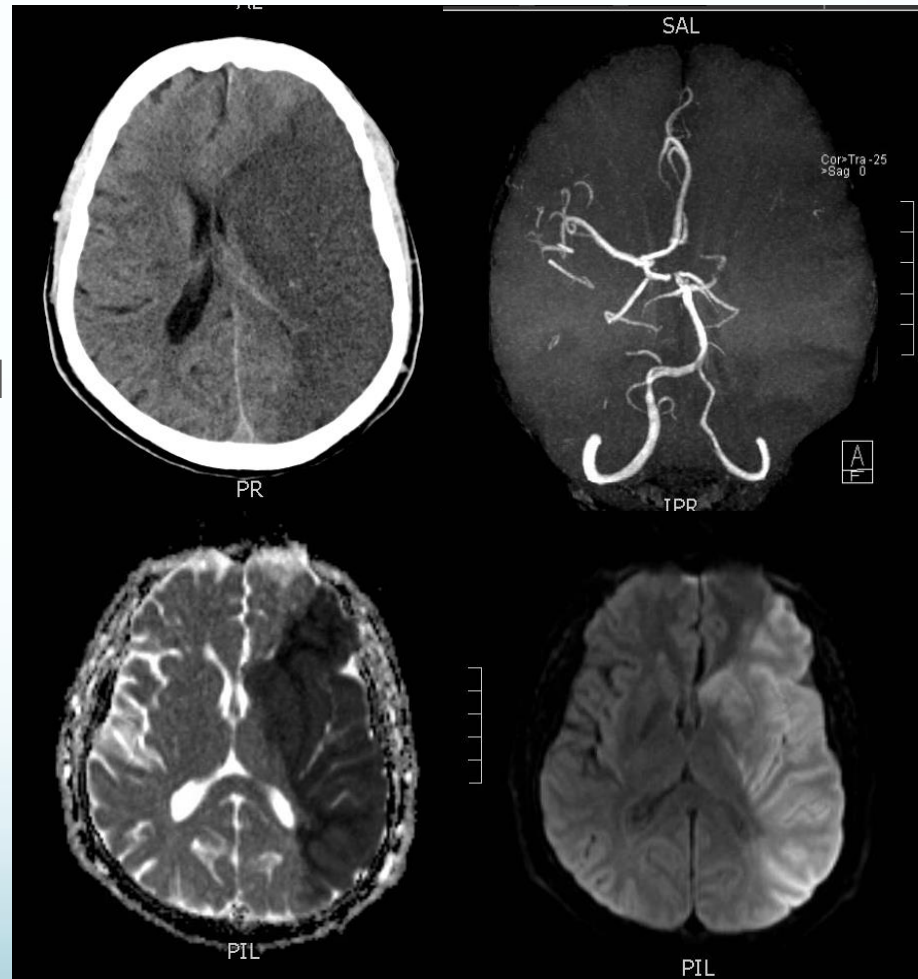
- National Institute of Health Stroke Scale (NIHSS) score at presentation
- Glasgow Coma Scale (GCS) before, at, and after intervention
- Inclusion Criteria for surgery
- Medical therapy

# Clinical Materials and Methods

- Exclusion criteria
- Mortality at three-months and at one-year
- One-year follow up after intervention
- Barthel Index (BI) & modified Rankin Scale (mRS) as measures for functional independence.
- All values were were expressed as mean SD.

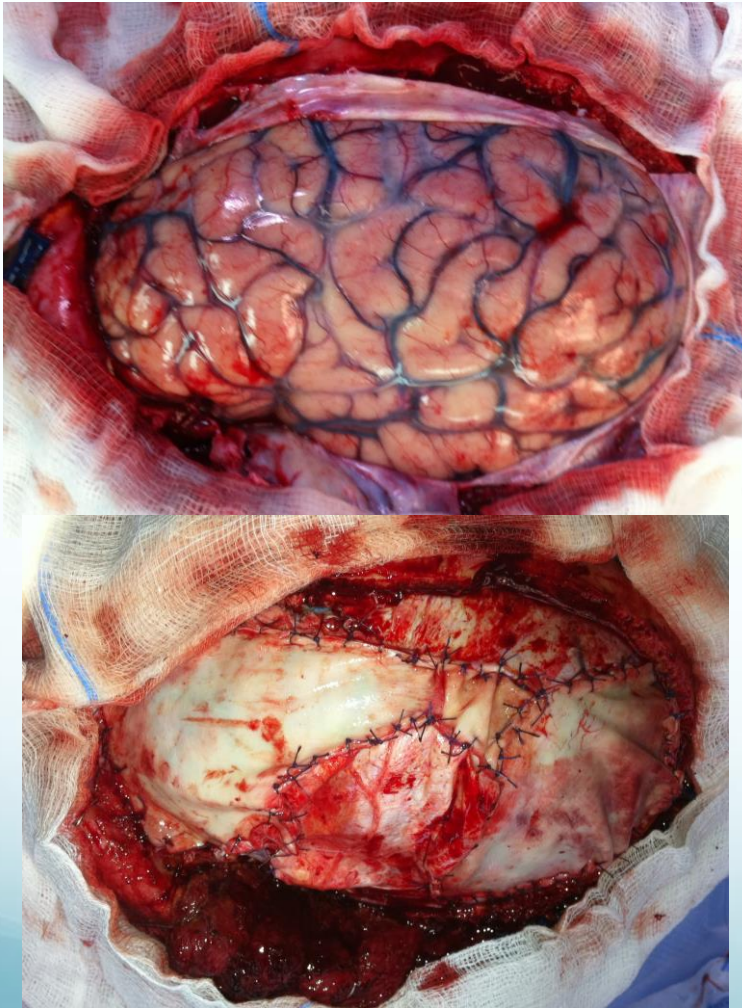
# Surgical technique

- 58 yrs old male
- DM and HPT
- Referred from another hospital 24 hrs after development of aphasia and right hemiparesis.





# Surgical technique



# Results

Value	Mean
N (%)	6 ( 60 %)
Gender ( Male patients )	4 ( 66 %)
Age ( mean SD)	41.57 ±15.86
NIHSS ( mean SD)	15.00 ± 6.20
Preoperative GCS ( mean SD)	6.83 ± 3.19
Postoperative GCS ( mean SD)	5.67 ± 4.84
mean time from symptoms to surgery	48.8 ± 45.1
Non-dominant hemispherectomy (%)	3 (50%)
Post-op complications	2 (33 %)
Barthl index ( mean SD)	37.5 ± 31.82
modified Rankin Scale ( mean SD)	3.50 ± 0.71
Mortality	4 (66%)

# Discussion

- Over the past 20 years, several studies have shown that decompressive surgery is an effective treatment for otherwise uncontrollable increased ICP after severe hemispheric stroke.
- In our series surgery had improved mortality to 66% compared to the reported 80 % without intervention, this number is considered lowest reported in the literature (16 to 43%)

**Schwab et al, 2011 and Walcott et al, 2011**

- This can be explained by great variations in the time from symptoms' onset to surgery, with delay in decision for surgery reaching up to 6days.

# Discussion

- In other series, earlier intervention (within 24 hours) before the occurrence of herniation signs, has been showed to significantly reduce mortality (16%).

**Fandino et al, 2004**

- In our study, the overall complication rate was relatively lower than other reports (33%), with a previously reported complication rate reaching up to 47% in a recent systematic review.

**Kurland et al, 2015**

# Discussion

- In one study, development hemorrhagic transformation after surgery was associated with worse outcomes.

**Lee et al, 2012**

- In this series, no significant improvement encountered in the functional independence with mean BI  $37.5 \pm 31$  which was less favorable compared to the numbers reported (47 to 68.8)

**Schwab et al, 2011 and Fandino et al, 2004**

- We found no significant effect on the reduction of moderate-sever disability (mRS  $> 4 = 66\%$ ) compared to literature.

**Arnaout et al, 2011**

# Conclusion

- Early surgery should be considered within the first 24 hours before clinical deterioration occurs, and early referral of such cases to the neurosurgeon is advised.
- The high postoperative mortality and the relatively poor functional outcome reported in this series deserves careful further analysis.
- The variations in the surgeon's knowledge and attitude towards decompressive surgery could be an important factor, and should be studied thoroughly.