

Table 3 Distribution of patients' subjective parameter ratings pre-operatively. (Total $N = 33$)

Subjective parameters	None (n)	Mild (n)	Medium (n)	Severe (n)
Spontaneous pain	11	3	10	9
Pain on function	0	3	15	15
Difficulty on chewing	1	5	12	15
Perceived disability of jaw movements	1	6	12	14

contours around the articular eminence. Stage I and Stage V joints were not detected.

Arthroscopic examination revealed that 1 Wilkes Stage II patient had anterior disc displacement; 3 Wilkes Stage III patients had mild and localised thin fibrillations of the articular cartilage with antero-medial disc displacement; 5 Wilkes Stage IV patients had extensive, thick fibrillations of the articular cartilage with antero-medial disc displacement and creeping synovitis.

Findings of pre-operative clinical examination, pre-operative MRI and arthroscopic lysis and lavage were parallel; thus clinical, MRI and arthroscopic (under direct vision) Wilkes Staging of the 9 patients were identical.

When AAOMS success criteria [15] are considered, surgical treatment outcome in our group of patients is given in Table 6. The list of AAOMS criteria and the results applied to our study are below,

- A. Masticatory function was improved in all, but 2 patients
- B. Level of pain was of little or no concern for all, but 2 patients as measured by the modified visual analogue scale.
- C. Mastication, deglutition, speech and oral hygiene hence mandibular function improved in all, but 7 of our patients had extended disability.
- D. All of the patients had stable occlusion with no temporary or permanent premature contacts.
- E. Recovery was uneventful and introduction of mouth stretching exercises immediately post-operatively limited period of disability.
- F. No permanently disabling complications were encountered (further morbidity was limited).

Table 4 Distribution of patients' subjective parameter ratings at discharge (Total $N = 33$)

Subjective parameters	None (n)	Mild (n)	Medium (n)	Severe (n)
Spontaneous pain	28	3	1	1
Pain on function	27	5	1	0
Difficulty on chewing	26	5	2	0
Perceived disability of jaw movements	22	4	7	0

Table 5 Distribution of patients' clinical staging (Wilkes) of internal derangement pre-operatively and at discharge (Total $N = 33$)

	Stage I	Stage II	Stage III	Stage IV	Stage V
Pre-op.	0	9	10	14	0
At discharge	9	10	0	14	0

G. Understanding and acceptance by patient (family) of favourable outcomes, known risks and complications is an imperative component of the informed consent process for surgical management of TMJ patients.

H. Symptoms and quality of life improved for most of the patients' through out the follow up period.

Discussion

The contemporary evidence based management of ID with or without OA include; no treatment, medical treatment, physical therapy, arthrocentesis and arthroscopic surgery [15–20]. Treatment costs are quite variable from none (no treatment) to several thousand British pounds (arthroscopic surgery under general anaesthesia). One might think that not treating patients would not involve any costs and all the patients would eventually become asymptomatic as shown by Schiffmann et al. [16]. “No treatment” can actually be more costly, because of the extended distress of the patients, resulting in loss of labour and prolonged use of analgesics. For this reason the authors of this manuscript believe that not offering treatment to symptomatic ID with or without OA cases is unethical because of the psychological burden this would place on the patients. However “no treatment” should definitely be an option to be discussed with the patient during the informed consent process.

Information gathered from clinical and radiological examinations might fail to point towards a best treatment approach; hence deciding on the most appropriate treatment option for ID is difficult. The reliability of panoramic radiography is known to be poor for detecting OA or other soft tissue pathologies of TMJ. However MRI is a reliable tool in order to detect bone marrow oedema, disc displacement with or without reduction, increased fluid level in the joint and computerised tomography (CT) is reliable for radiological diagnosis of OA [21].

Table 6 Treatment outcome according to the AAOMS (American Association of Oral and Maxillofacial Surgeons) criteria (2017)

Treatment outcome	Number of patients (n)
Excellent	14
Good	17
Poor	2
Success rate	94%