SUMMARY OF RESULT

Pilot study

A pilot study was carried out using 7 participants. The research protocols and proforma for data collection were assessed for correctness and completeness. The OHIP14 was also administered before and after M3 surgery. The VAS for pain assessment showed a cronbach α of 0.818. The Laskin method for facial width measurement adopted here showed a cronbach α score of 0.991, while that for the linear measurement of mouth opening was 0.883.

The participants in the pilot phase were analysed in the final sample as there were no notable changes in the study protocol.

5.1 Gender and age distribution

Eighty six (86) patients satisfied the inclusion criteria and consented to participate in this study. Twelve participants (13.9%) were lost to follow-up, some due to travel costs. Hence, 74 participants completed this study giving a completion rate of 86.1%. Group 1 (sutureless) and Group 2 (complete closure) had 36 and 38 participants respectively.

Overall, 35 (47.3%) were females and 39 (52.7%) were males, with a male to female ratio was 1.1:1. The male to female ratio was 0.6:1 and 1.6:1 and in groups 1 and 2 respectively. The two groups had no statistically significant difference in their gender distribution (p value=0.068)

The age of the participants ranged from 18 to 54years. The mean age (±SD) for all the paticipants was 30.2(±8.3) years. Majority of the participants (60%) were in the 21-30 age bracket (Fig 5). The mean age (±SD) of subjects was similar, with means of 29(±8.7) years and 31.4(±8) years for groups 1 and 2 respectively (Table 1). There was no statistical significant difference in the age distribution of the participants in the two groups (p value = 0.23).

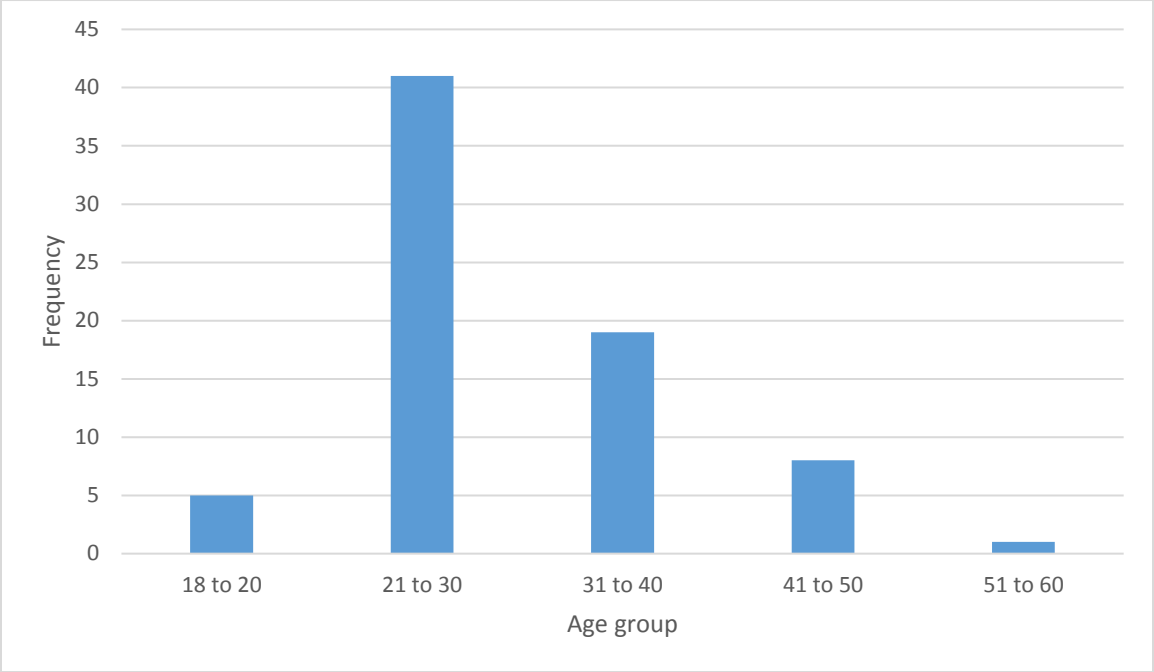

Figure 5: Age group of participants

5.2 Body Mass Index

47 of subjects (63.5%) had normal BMI (Table 1). There was no statistically significant correlation between the BMI of the patient and the postoperative pain, swelling, trismus and QoL (Table 3). There is no statistically significant difference in the BMI of the two groups (p=0.41)

5.3 Types of impaction

Using Winter's classification, the commonest type of impaction was mesioangular (44.6%) (Table 1). The two groups had similar composition with regards to the impaction type. (p=0.39).

5.4 Indications for extraction

Recurrent pericoronitis was the most common reason for surgical extraction (52.7%), followed by caries and its sequelae (Table 1). The two groups did not statistically differ in their indications for extraction (p=0.13) and therefore no further analysis will be done using this variable.

Table 1: Sociodemographic variables in the two groups

			COMPLETE CLOSURE	**SUTURELESS**	X^2 **(P)**
		N (%)	N (%)	N (%)	
AGE (YEARS)	18-20	5 (6.7)	2 (5.2)	3 (8.3)	3.84 (0.43)
	21-30	41 (55.4)	19 (50)	22 (61.1)	
	31-40	19 (25.6)	11 (28.9)	8 (22.2)	
	41-50	8 (10.8)	6 (15.7)	2 (5.55)	
	51-60	1 (1.3)	0 (0)	1 (2.78)	
GENDER	Male	39 (52.7)	24 (63.16)	15 (41.66)	3.42 (.068)
	Female	35 (47.3)	14 (36.84)	21 (58.33)	
			38 (100)	36 (100)	
BMI (KG/M^2)	Underweight	4 (5.4)	3 (7.89)	1 (2.77)	69.97(0.41)
	Normal	47 (63.5)	21 (55.26)	26 (72.22)	
	Overweight	19 (25.6)	11 (28.94)	8 (22.22)	
	Obese	4 (5.4)	3 (7.89)	1 (2.77)	
			38 (100)	36 (100)	
IMPACTION					
	Mesioangular	33(44.6)	15 (39.4)	18 (50)	4.12 (0.39)
	Vertical	19 (25.7)	11 (28.9)	8 (22.2)	
	Horizontal	13(17.6)	9 (23.7)	4 (11.1)	
	Distoangular	8 (10.8)	3 (7.9)	5 (13.9)	
	Lingual	1 (1.4)	0 (0)	1 (2.7)	
			38 (100)	36 (100)	
INDICATION					
	Pericoronitis	39 (52.7)	16 (42.1)	23 (63.9)	4.08 (0.13)
	Caries	34 (45.9)	21 (55.3)	13 (36.1)	
	Periodontitis	1 (1.4)	1 (2.6)	0 (0)	
			38 (100)	36 (100)	

5.7 Intra-operation variables

The volume of LA used ranged from 4ml to 10mls with a mean volume of 5.32ml (SD=1.34). The volume of LA used was similar in both groups (p=0.70). Tooth sectioning was done in 8 cases (10.8%) of surgically extracted teeth and there was no statistically significant difference in both groups (Fishers exact test p=0.474)

The total operating time ranged from 6mins to 90mins with a median of 18mins (IQR 11.4). The median total operation time in sutureless and in complete closure group was 18.0 (IQR 10.3) and 18.5mins (IQR16.5) respectively (p=0.654). There was a positive correlation between the operation time and postoperative pain on days 2-6 (Table 3).

The median bone cutting time was 8mins (IQR9). There was a positive correlation between the bone cutting time with the postoperative pain and trismus (Table 3)

Outcome variables

5.8 Pain –

The overall mean (±SD) preoperative pain score in group 1 and 2 were 1.65 and 1.55 respectively and did not statistically differ (p=0.79). The preoperative pain had no significant correlation with the postoperative pain, swelling, trismus and QoL (Table 3)

Although, pain score was observed to be higher in sutureless group on all postoperative days, this difference was statistically significant only on POD 1, 3, 4, and 5 (Table 2).

The mean total pain scores was significantly higher in the sutureless group 22.06 (±11.93) than in the complete closure group 14.39(±8.60) t= 2.99, p=0.004, 95%CI 2.53 to 12.8.

Table 2: Comparison of the mean postoperative pain VAS (cm) in the complete closure and sutureless groups.

	COMPLETE CLOSURE	**SUTURELESS**	***P* VALUE**
	Mean (SD)	Mean (SD)	
1DPO	3.26 (2.66)	6.03 (2.98)	**0.001**
2DPO	3.27 (2.17)	4.42 (2.83)	0.094
3DPO	2.49 (1.95)	3.79 (2.79)	**0.044**
4DPO	1.58 (1.54)	2.59 (2.16)	**0.044**
5DPO	1.48 (1.68)	2.56 (2.29)	**0.032**
6DPO	1.35 (1.62)	1.55 (2.14)	0.64
7DPO	0.56 (0.77)	1.08 (1.91)	0.18
TOTAL PAIN	14.39(8.60)	22.06 (11.93)	**0.004**

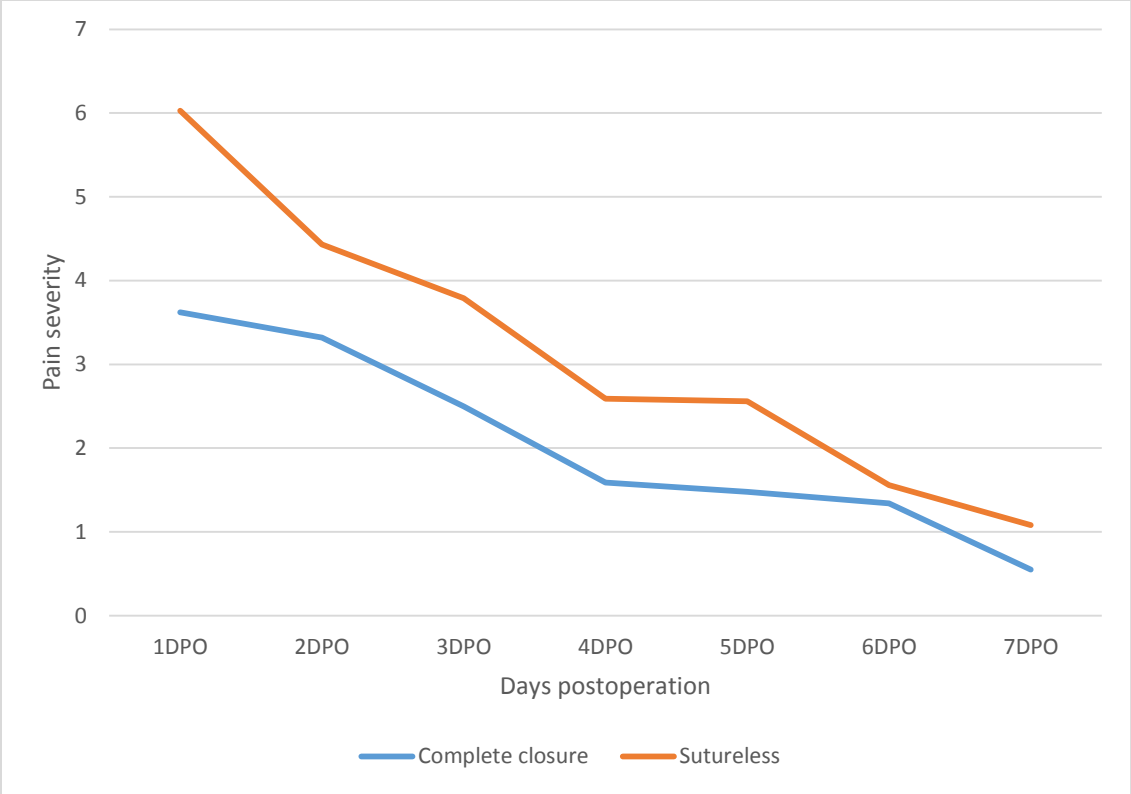

Fig 6: Graphic representation of the pain severity in the complete closure and sutureless groups

Table 3: Correlation between variables and outcome measures

		AGE	**BMI**	**BASELINE OPENING**	**BASELINE QOL**	**TOTAL OPERATION TIME**	**BONE CUTTING TIME**
		r (p)	r (p)	r (p)	r (p)	r (p)	r (p)
PAIN	1DPO	**-.306(.01)**[#]	-.21(.09)	-.084(.26)	-.13(.12)	.207(.05)	**.215(.044)***
	2DPO	**-.215(.04)**[*]	-.021(.46)	.105(.21)	.148(.16)	**.31(.008)**[#]	**.302(.006)**[#]
	3DPO	-.10(.26)	.018(.45)	.003(.49)	.002(.24)	**.45(.00)**[#]	**.37(.001)**[#]
	4DPO	-.058(.36)	-.025(.42)	.115(.18)	-.002(.44)	**.49(.00)**[#]	**.44(.00)**[#]
	5DPO	-.038(.38)	-.116(.18)	.018(.44)	.198(.47)	**.25(.024)**[*]	**.25(.025)***
	6DPO	.028(.41)	.08(.26)	.001(.49)	-.004(.08)	**.21(.006)**[#]	**.22(.005)**[#]
	7DPO	-.012(.47)	.021(.43)	.059(.32)	.002(.46)	.134(.08)	.227(.07)
SWELLING	1DPO	.29(.38)	-.59(.26)	-.214(.053)	.01(.44)	.141(.47)	.175(.34)
	3DPO	.32(.31)	.61(.42)	-.03(.41)	-.016(.28)	.17(.22)	.17(.26)
	7DPO	.31(.38)	-.57(.12)	-.041(.37)	.015(.46)	.075(.27)	.046(.33)
TRISMUS	1DPO	.081(.27)	-.01(.47)	**.465(.001)**[#]	.037(.44)	.189(.084)	**.218(.046)***
	3DPO	.055(.33)	.078(.27)	**.412(.001)**[#]	.028(.44)	.255(.057)	**.260(.045)***
	7DPO	.092(.24)	-.051(.34)	**.248(.024)***	.097(.23)	.202(.21)	.226(.17)
QOL	7DPO	.031(.81)	.156(.22)	-.190(.13)	**.305(.013)**[#]	.151(.23)	.133(.29)

At significance p <0.05; the strength of correlation r is given thus

r=0.10 to 0.29 Small*

r=0.30 to 0.49 Medium[#]

r=0.50 to 1.0 Large[@]

Negative value = negative correlation

Positive value = positive correlation

5.9 Facial Swelling

Both groups had comparable preoperative facial width measurements (p=0.135) with means of 11.45(±0.75) cm and 12.63(±0.96) cm in group 1 and 2 respectively

A. Facial width measurement – There was significant facial swelling on 1DPO and 3DPO in both groups (p=0.0). In both groups, highest facial width measurement values were seen on 1DPO. The facial swelling was higher in the complete closure group on 1, 3 and 7DPO. However, this difference was not statistically significant (Table 4a)

The total swelling recorded on the postoperative days in the two groups were also not statistically different (p=0.84)

B. Facial swelling perception - The total swelling perception score (using visual analogue scale) showed no statistically significant difference between the two groups (p=0.841). Although the swelling perception was higher in the complete closure group on 2DPO and 3DPO and crudely comparable on the following days, these differences were not statistically significant (Table 4b)

Table 4a: Comparison of mean facial width measurement and swelling (in cm) in the complete closure and sutureless groups

		COMPLETE CLOSURE	SUTURELESS	P VALUE
		Mean (SD)	Mean (SD)	
PREOPERATIVE	Facial measurement	12.63(0.96)	11.34(0.75)	0.135
1DPO	Facial measurement	13.26(0.87)	11.8(0.72)	0.268
	Difference (swelling)	0.46(0.32)	0.36(0.35)	
3DPO	Facial measurement	13.01(0.86)	11.63(0.69)	0.812
	Difference (swelling)	0.30(0.28)	0.28(0.34)	
7DPO	Facial measurement	12.69(0.85)	11.35(0.76)	0.423
	Difference (swelling)	0.06(0.17)	0.003(0.39)	
TOTAL SWELLING		0.817(0.65)	0.528(0.98)	0.194

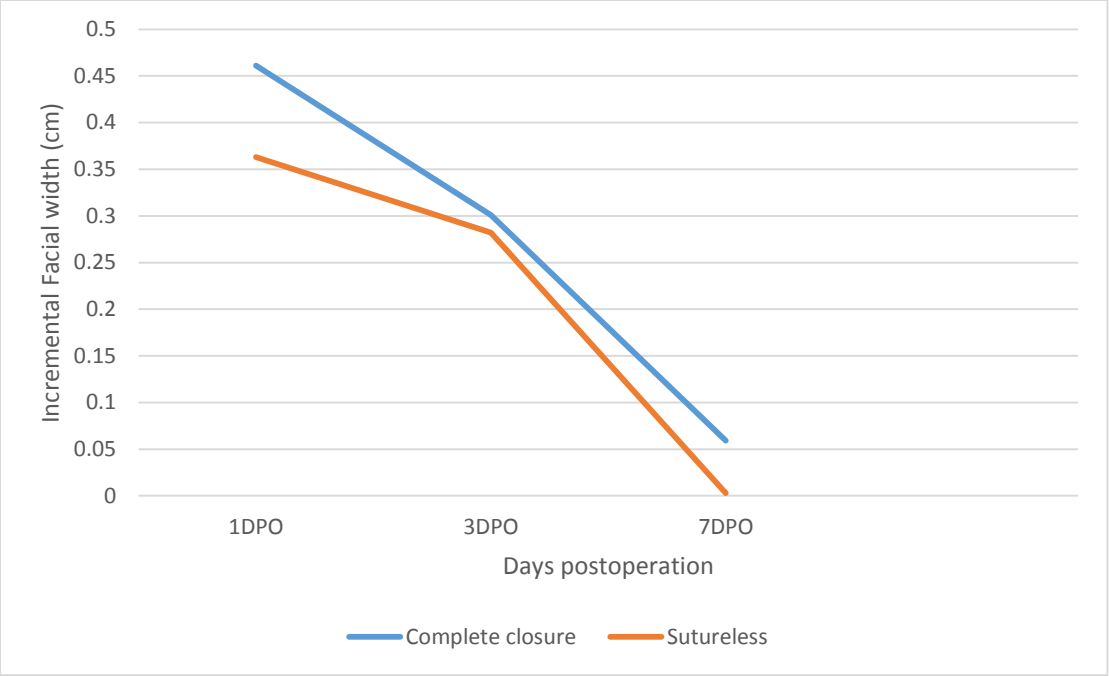

Fig 7: Comparison of facial swelling using facial width measurement in the complete closure and sutureless groups

Table 4b: Comparison of perceived swelling using VAS in the complete closure and sutureless groups

	COMPLETE CLOSURE	**SUTURELESS**	**P VALUE**
	Mean (SD)	Mean (SD)	
1DPO	2.09(1.01)	2.65(1.55)	0.348
2DPO	2.87(1.32)	2.25(1.60)	0.353
3DPO	2.20(1.26)	1.99(1.47)	0.732
4DPO	1.56(1.06)	1.49(1.25)	0.896
5DPO	0.98(0.73)	1.04(1.03)	0.880
6DPO	0.56(0.46)	0.41(0.39)	0.381
7DPO	0.25(0.27)	0.11(0.14)	0.225
TOTAL	10.52(4.83)	9.98(6.52)	0.841

5.10 Trismus -

Preoperative interincisal opening (IIO) ranged from 28mm to 57mm with an average of 44.5mm. The mean (±SD) interincisal opening (IIO) was statistically similar in both groups (p=0.538) (Table 5)

There was statistically significant trismus on 1, 3 and 7DPO in both groups (p=0.000). The difference in trismus was progressively greater in the complete closure group on 1, 3 and 7DPO than in the sutureless group. This was statistically significant only on 7DPO (Table 5)

Table 5: Comparing trismus in the complete closure and sutureless groups

		COMPLETE CLOSURE	**SUTURELESS**	**P VALUE**
		Mean (SD)	Mean (SD)	
PREOPERATIVE		43.99(8.12)	45.02(6.09)	0.538
1DPO	IIO (mm)	22.23(8.68)	24.52(10.4)	0.640
	Difference (trismus)	21.64(9.76)	20.35(11.2)	
3DPO	IIO (mm)	24.80(8.54)	28.56(19.8)	0.250
	Difference (trismus)	19.10(9.55)	16.15(10.8)	
7DPO	IIO (mm)	30.11(10.7)	36.66(9.33)	**0.007**
	Difference (trismus)	14.36(9.41)	7.86(9.03)	
TOTAL TRISMUS		55.64(27.17)	41.78(27.67)	0.065

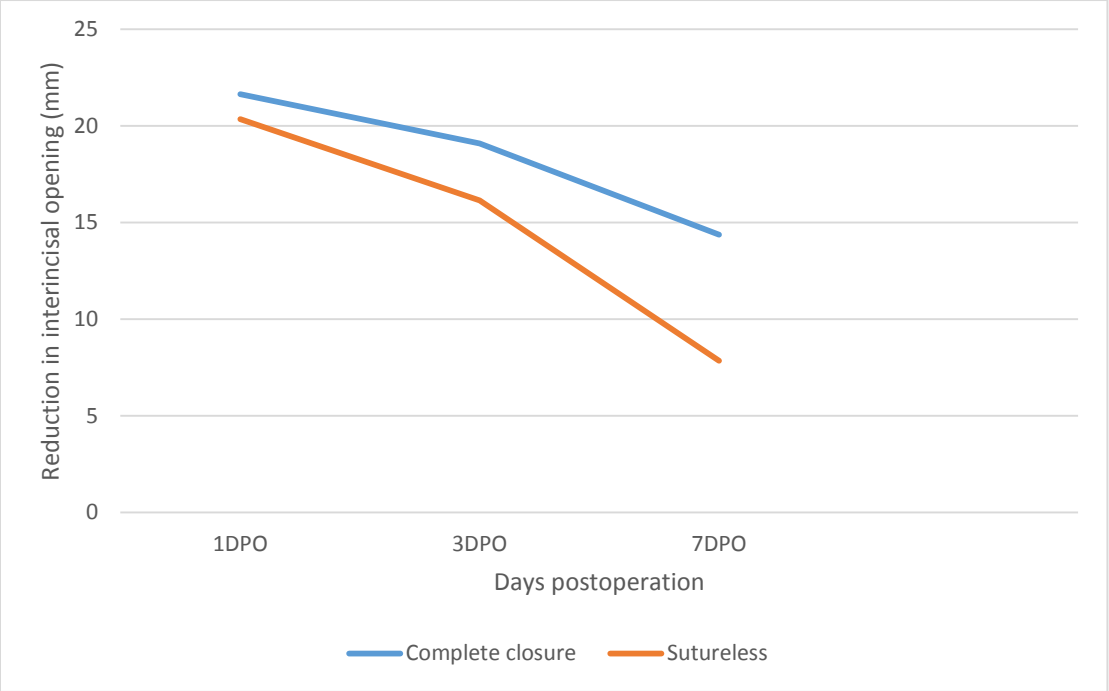

Fig 8: Severity of trismus in the complete closure and sutureless group

5.11 Quality of life –

The preoperative quality of life score ranged from 13 to 51, with an overall mean score of 26.03 (±8.48). There was no statistically significant difference in the preoperative QoL in the two groups (group 1= 24.69 (±8.42); group 2= 27.28(±9.30). About 36% of the subjects had an overall quality of life affectation prior to surgery across all the domains, with the most affected domain being in duty impairment followed by sleep impairment while the least affected domain was in physical appearance (Table 6a)

The postoperative QoL scores ranged from 15 to 53 and had a statistically significant increase with an overall mean of 31.40 (±8.65) (p=0.00). About two-thirds (62.12%) of the total subjects had quality of life affectation. The most affected domain was the eating domain and the impairment of duty domain. (Table 6a).

The mean postoperative quality of life score was 30.62 and 32.03 in groups 1 and 2 respectively and this difference was not statistically significant (p=0.519).

A comparison of the percentage affected in the several domains that make up the QoL in the two groups showed that there was no statistically significant difference in the percentage affected. (Table 6b). However, there was a statistically significant difference in the speaking domain (p=0.048) with the sutureless technique showing an advantage over the complete closure (Table 6c).

The proportion of those who lost working day(s) was also not statistically different in the two groups (table 6d). Likewise the difference in the two groups of those who had cause to ask for sick leave from work, those who kept to their usual social activities and hobbies were all not statistically significant.

Table 6a: Percentage of participants affected in the various QoL domains

	PREOPERATIVE (%)	**POSTOPERATIVE (%)**
EATING ABILITY	39.2	56.8
SPEECH IMPAIRMENT	12.2	33.8
PHYSICAL IMPAIRMENT	2.7	24.3
SLEEP IMPAIRMENT	58.1	27
DUTY IMPAIRMENT	68.9	35.1

Table 6b: Comparison of the percentage affected in the QoL domains in the complete closure and sutureless techniques.

QOL DOMAINS	**COMPLETE CLOSURE N=38**		**SUTURELESS N= 36**		**P VALUE**
	N	%	n	%	
EATING ABILITY	20	52.6	22	61.1	0.73
SPEECH IMPAIRMENT	16	42.1	9	25	0.22
PHYSICAL APPEARANCE	10	26.3	8	22.2	0.88
SLEEP IMPAIRMENT	10	26.3	10	27.7	0.98
DUTY IMPAIRMENT	11	28.9	15	41.6	0.50

Table 6c: Comparing mean scores of QoL domains in the complete closure and sutureless groups

	PREOPERATIVE	**COMPLETE CLOSURE**	**SUTURELESS**	**P VALUE**
	Mean (SD)	Mean (SD)	Mean (SD)	
EATING ABILITY	12.11 (4.53)	15.26 (4.17)	15.31(3.88)	0.969
SPEAKING ABILITY	4.75(2.60)	6.93 (2.91)	5.58 (2.15)	0.048
PHYSICAL APPEARANCE	2.67(1.43)	3.80 (1.86)	3.48 (1.76)	0.505
SLEEP IMPAIRMENT	4.42(2.27)	3.866 (1.87)	3.862 (1.97)	0.993
IMPAIRMENT OF DUTY	1.86(1.00)	2.06 (1.11)	2.51 (1.21)	0.164

Table 6d: Percentage of those answering "yes" to the QoL questions stated

	Complete closure (N=38)	*Sutureless (N=36)*	***p value***
	N (and %) of "Yes" answers	N (and %) of "Yes" answers	
Have you lost any day at work?	16(44.4)	18(50.0)	0.782
Have you had cause to ask for sick leave or discontinue work?	8(21.05)	10(27.7)	0.797
Have you kept to your usual social activities?	15(39.4)	16(44.4)	0.910
Have you continued with your favorite sports or hobbies?	16(42.1)	19(52.7)	0.626
If no, give reasons (% of Yes)			
Pain?	10(26.31)	10(27.7)	0.232
Swelling?	13(34.2)	6(16.6)	0.224
Physical appearance?	11(28.9)	6(16.6)	0.391
Bad mood?	3(7.89)	3(8.3)	0.44
Malaise?	6(15.78)	5(13.88)	0.46

5.12 Complications - A total of seven subjects experienced complications, giving a complication rate of 9.5% (Table 7). The complication rates were 8.3% and 10.5% in the sutureless and complete closure groups respectively, and this difference was not statistically significant (p=0.548).

Dry socket was observed in 2 participants, one in each group, giving an overall incidence of 2.7%. The patients were reassured of the condition. Minimal alveolus curettage after the administration of local anaesthetic, followed by irrigation using warm normal saline done at initial diagnosis; then to continue warm saline mouth bath 8times daily. Additional curettage was deemed necessary during the recovery period and was reinstituted in one case. This was then followed by oral administration of ibuprofen (400mg 8 hourly for three days).

Subject with nerve paraesthesia was reassured, and placed on Tabs Neurobion 1 Tablet 8 hourly for 1 month. Subject was reviewed at one month and the symptom had subsided.

The complaints reported by subjects during the week following surgery were dysphagia (6), nausea and vomiting (1), lip commissure ulcers (6) and cheekbiting (1). These patients were reassured and a moisturizing balm was further recommended to be applied 1-2x daily for patients with lip ulcers. The complaints had resolved at the 7DPO review.

Table 7: Complications seen in the week following impacted M3M removal in complete closure and sutureless group.

	Sutureless (N)	**Complete closure** (N)	**Total**
Atypical facial pain	1	0	1
Dry socket	1	1	2
TMJ pain	0	1	1
Lingual N paresthesia	0	1	1
Loss of taste	1	0	1
Mobile7	0	1	1
None	33	34	67
	36	38	74