British Orthopaedic Foot and Ankle Society

Registry Report 2025

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BOFAS

Contents

BOFAS Registry

Introduction

The data presented in this report covers procedures entered into the British Orthopaedic Foot & Ankle Society (BOFAS) Registry from its inception in 2014 until December 2024. The 1st Metatarsophalangeal Joint Arthrodesis Pathway and the Ankle Arthrodesis Pathway have been open since the registry started, however the Foot and Ankle General Pathway was opened towards the end of 2016. More recently further condition specific pathways have been introduced: Achilles Rupture Trauma Pathway, Achilles Tendinopathy Pathway, Ankle Primary & Revision Arthroplasty pathways, Ankle Fracture and Foot and Ankle Trauma, and 1st MTPJ Arthroplasty pathways.

The registry now forms an integral part of two NICE intervention procedure guidelines: IPG727 and IPG789. The former, published in June 2022, requires patients undergoing synthetic cartilage implantation for metatarsophalangeal joint arthritis to be entered on to the BOFAS Registry. The latter, published in June 2024, requires the same for those undergoing percutaneous or minimally invasive Hallux Valgus surgery.

With increasing participation we have seen a steady increase in data entry numbers, but it remains that the Registry only captures a small proportion of national activity, both in the Private & NHS sectors. Progress has been made with the inclusion of data from some, already established, Amplitude based Hospital systems who now contribute a significant number of pathways to the registry. We continue to explore how we may import data from other established hospital Patient Related Outcome Measure (PROM) collection systems.

The majority of the information in this report is summary data, however we have begun to statistically analyse certain outcomes where we have sufficient pathway numbers. The Foot & Ankle Trauma and Ankle Fracture pathways are not summarised in this year's report due to the heterogenous nature of the cases and low numbers in the subgroups. As these pathways mature it is our intention to report their outcomes.

The information contained within this report will be useful for BOFAS members in their appraisals and, as we continue to collect data, it will aid quality improvement and may help direct practice nationally. The Registry incorporates a downloadable personal Revalidation Report, which in conjunction with the annual report, can be used to assess your own practice against the national average.

The BOFAS Registry is one of the eight emerging registries forming part of the Trauma & Orthopaedic Registries Unifying Structure (TORUS). TORUS is a collaborative project of the British Orthopaedic Association (BOA) in conjunction with the specialist societies.

The BOFAS Registry is a national audit and is available to all foot and ankle surgeons who are members of the society. Surgical disciplines lend themselves to evidence capture, and a registry is an ideal method of demonstrating the nature and success of one's practice.

Aims

The broad aims of the BOFAS Registry are in line with those of the BOA Quality Outcomes project:

- Help surgeons to track the outcomes of their patients.
- Allow Surgeons/Trusts to compare themselves to others or the average and to identify areas for improvement.
- Provide surgeons with information for revalidation.
- Provide evidence on trends in outcomes, performance of different implants/procedures/etc.
- Enable individuals and Trusts who may be potential outliers to be alerted to this in order to take action.

Section 1: Clinical Practice Committee

Background

The BOFAS Registry is the responsibility of the BOFAS Clinical Practice Committee. The role of the committee is to support the Society and Council in developing suitable processes to collect patient outcome measures.

Duties of the Outcomes Committee include:

- Working with the platform provider to enable collection of information into central BOFAS registry.
- Ensuring that the consent from remains compliant with legal requirements.
- Oversight of information governance.
- Publication of data.
- Registry funding.
- Long term strategy.

Further details regarding the BOFAS Registry can be found on the BOFAS website.

Membership of the Clincal Practice Committee

Chair:	Lyndon Mason	**Co-opted:**	Andy Goldberg
Secretary:	Nilesh Makwana	**Co-opted:**	Karan Malhotra
Member:	Tim Clough	**Co-opted:**	Toby Jennison
Member:	Joel Humphrey	**Co-opted:**	Ed Wood
Member:	Shilpa Jha	**Caldicott Guardian:**	Jitendra Mangwani
Member:	Robbie Ray	**President:**	Mark Davies
Member:	Ben Hickey	**Data Protection Officer:**	Jo Millard

Uptake

Uptake of the Registry by the BOFAS membership is increasing with time with 224 registered pathway owners, however only a minority of members are actively entering data. Over the last few years the registry has seen a substantial increase in the total number of pathways and patients: by the end of 2024 in excess of 29000 pathways and over 24000 patients are held within the registry (Fig 1). This is still however, only a small proportion of the national figures.

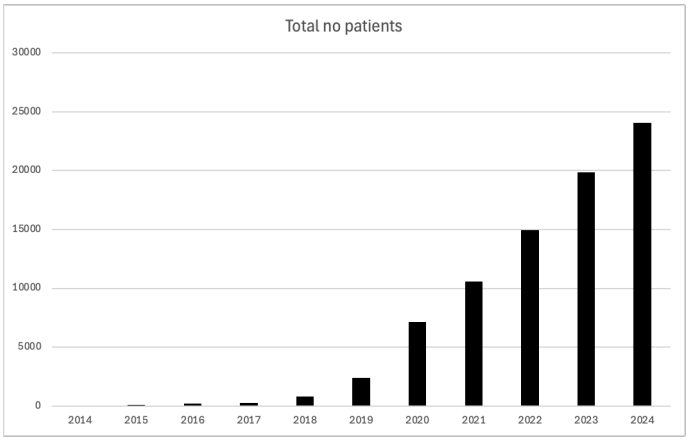


Figure 1.1 - Registry totals by year

Activity on the registry reveals a progressive recovery from the impact of the COVID-19 pandemic. We registered only 21 new pathways in February 2021. Over 2020, on average, only 48 new pathways were registered per month with the figure for 2021 being 99 on average per month. Over the last two years we have seen increased activity, with approximately 400 new pathways being added per month.

Separate to the Registry, as part of a collaboration between the Scientific and Outcomes committees, work has been done looking at the outcome of patients in the UK who underwent foot and ankle surgery during the COVID-19 crisis. This is detailed in the UK-FALCON reports, available on the BOFAS website (https://www.bofas.org.uk/clinician/research/bofas-national-audits).

A number of factors may prevent surgeons from registering and entering cases: time pressure, unfamiliarity, concern regarding data use, local or national regulations. As the registry is not currently mandated, support from Trusts regarding data collection and input is widely variable. We believe this will be a valuable tool for our members for revalidation and appraisal and may become something that the Responsible Officers look too. Instructions on how to setup and use the registry are now available on the BOFAS website (https://www.bofas.org.uk/clinician/bofas-registry/setting-up-your-registry).

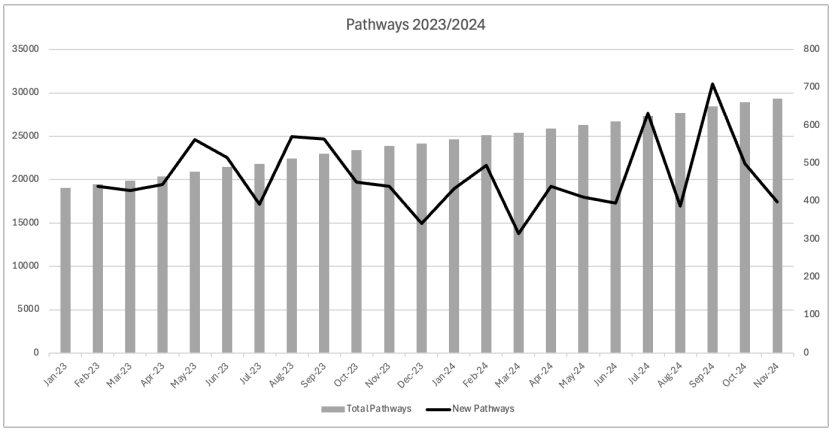


Figure 1.2 - Pathways 2023/2024

Compliance

Compliance for consent is high across the three pathways (≥95%). Where consent has been gained, surgeons can look back at individual outcomes. Where consent is absent, the record is anonymised. In this scenario, the PROMS enter the registry summary data, but it is not possible to identify the individual or add follow up data. It is still necessary to take paper consent and file this in the notes even though patients confirm consent online when they first log in, since their details have been entered to enable them to be contacted, and that is only legal if consent has already been taken.

Between 15% and 34% of cases have no email address associated with their entry. This removes the ability of the registry to automate data collection. In this scenario different strategies for post-op PROMS collection need to be put in place. Making use of telephone review streams can be a good solution.

We have also seen a significant proportion of patients registered but with no initial PROMS entered (18% - 39% depending on pathway). It is not clear if this reflects patients registered in clinic, who are yet to come to their procedure, or if it has simply not been recorded.

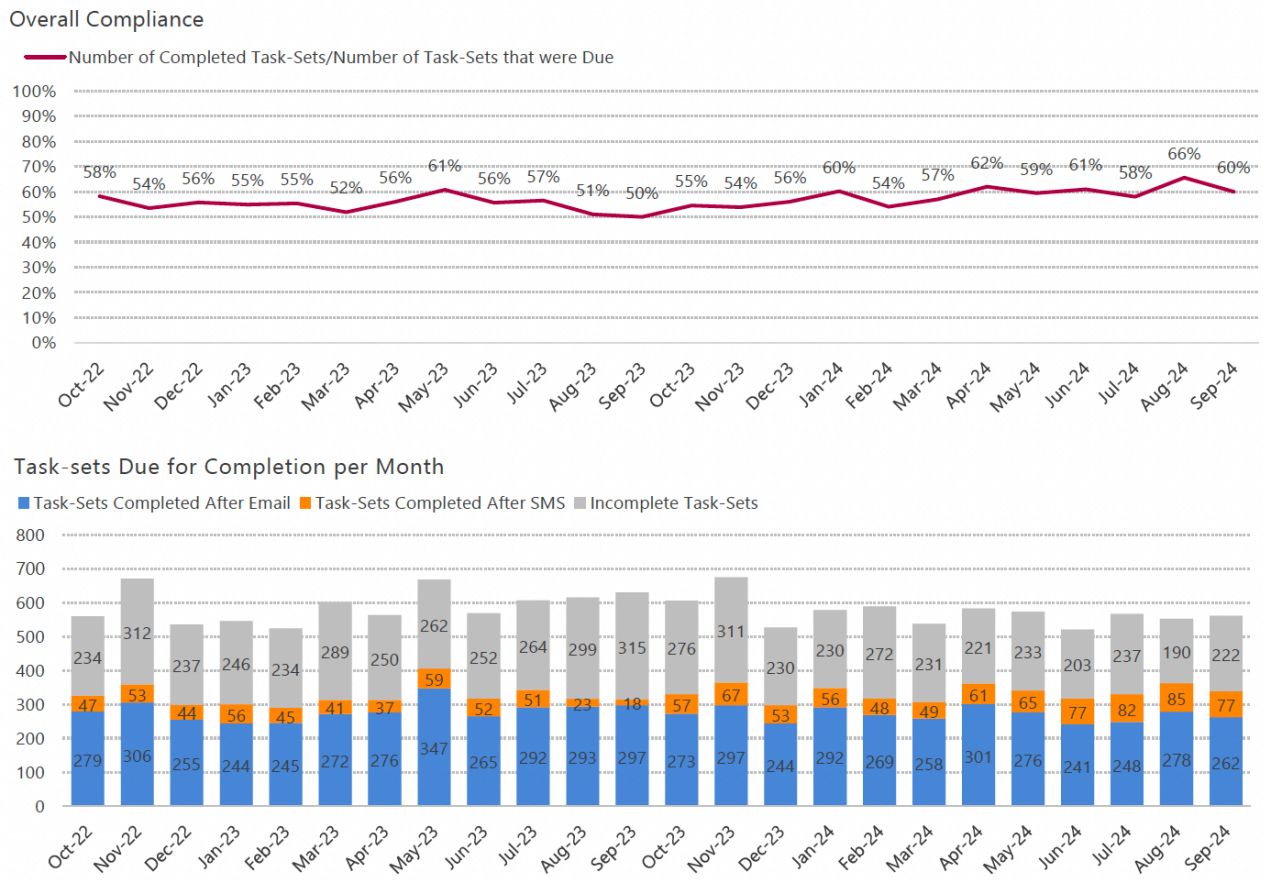


Figure 1.3 - BOFAS Registry Compliance

Pathway Owners

Contributing Surgeons / Units

Aamir Zubairy East Lancashire Hospitals NHS Trust
Abhijit Guha Worcester Acute Trust
Adam Devany James Paget University Hospital
Adrian Hughes Royal Devon & Exeter
Ahmed Latif Guy's and St Thomas NHS trust
Alastair Marsh University Hospitals Birmingham NHS Trust
Ali Abbasian Guys and St Thomas Hospitals
Amirul Islam Liverpool University Hospitals NHS FT
Andrea Sott Epsom & St Helier NHS Trust
Andrew Bing Robert Jones & Agnes Hunt Hospital
Andrew Gower County Durham and Darlington NHS FT
Andrew Kelly Somerset FT
Andrew Riddick Southmead Hospital, Bristol
Andy Molloy Liverpool University Hospitals NHS FT
Arshad Khaleel Ashford and St Peter's Hospital
Ashok Acharya Barking, Havering and Redbridge NHS FT
Barry Rose Eastbourne District General Hospital
Basil Budair The Royal Orthopaedic Hospital NHS FT
Ben Rudge West Hertfordshire
Billy Jowett Spire Portsmouth Hospital
Bobby Mobbassar Siddiqui Queen Elizabeth Gateshead NHS FT
Callum Clark Frimley Health
Catriona Heaver Robert Jones & Agnes Hunt Hospital
Charline Roslee University Hospitals Dorset NHS FT
Christopher Marquis Robert Jones & Agnes Hunt Hospital
Claire Topliss Abertawe Bro Morgannwg University HB
Daniel Marsland Hampshire Hospitals NHS FT
David Loveday Norfolk and Norwich University Hospitals NHS FT
David Machin Countess of Chester Hospital NHS FT
Derek Robinson Royal United Hospital Bath NHS FT
Devendra Mahadevan Reading Foot & Ankle Unit
Donatas Chlebinskas Sheffield Teaching Hospitals NHS FT
Edward Dawe Nuffield Chichester
Edward Wood Countess of Chester Hospital NHS FT
Gary Hannant Bradford Teaching Hospitals NHS FT
Gavin Heyes Musgrave Park Hospital
George Smith Norfolk and Norwich University Hospitals NHS
Georgios Kiziridis Ashford & St Peter's Hospitals NHS Trust
Heath Taylor Royal Bournemouth Hospital
James Aird Derriford
Jamie McKenzie Royal Orthopaedic Hospital, Birmingham
Joel Humphrey Milton Keynes University Hospital
John Grice Great Western Hospital
John Stuart Moir Greater Glasgow & Clyde
Jonathan May Chesterfield
Julian Grundy YDH
Kailash Devalia Gateshead
Kar Teoh Princess Alexandra hospital, Harlow
Lucy Cooper Liverpool University Hospitals NHS FT
Lyndon Mason Liverpool University Hospitals NHS FT
Lynne Barr Colchester
Mark B Davies Sheffield Teaching Hospital NHS FT
Matthew Henderson Gloucester
Matthew Solan Royal Surrey County Hospital NHS Trust
Maurice O'Flaherty Musgrave Park Hospital
Melwyn Pereira Worcestershire Acute Trust
Michael Butler Royal Cornwall Hospital, Truro
Michael Carmont Shrewsbury & Telford Hospital NHS Trust
Michael Dean Royal Devon & Exeter
Miguel Fernandez Worcestershire Acute Hospitals
Neal Jacobs Salisbury
Nicholas Savva Dorset County Hospital
Nikki Kelsall Royal Bournemouth & Christchurch Hospitals
Nilesh Makwana Robert Jones & Agnes Hunt Hospital
Osmond Thomas NewCross Hospital
Palanisamy Ramesh Parkside Hospital
Paresh Kothari Sherwood Forest NHS Trust
Paul Halliwell Royal Surrey County Hospital NHS Trust
Paul Hamilton Epsom & St Helier NHS Trust
Paul Patterson Gateshead
Peter Robinson Southmead Hospital, Bristol
Phil Vaughan West Suffolk Hospital
Raghu Kankate High Wycombe
Raj Kugan Worcestershire Acute Hospitals
Rajasekhar Chilamkurthi Sherwood Forest NHS Trust
Razi Zaidi Kings College Hospital London NHS FT
Robbie Ray Kings College Hospital London NHS FT
Robin Elliot Hampshire Hospital
Robin Rees University Hospital of North Midlands NHS Trust
Ryan Geleit Kingston
Sanjeev Goswami Walsall Healthcare NHS Trust
Simon Barnes Mid Cheshire Hospital Foundation Trust
Simon Henderson Musgrave Park Hospital
Siva Sirikonda Liverpool University Hospitals NHS FT
Sohail Yousaf Epsom & St Helier NHS Trust
Stephen Hepple Southmead Hospital, Bristol
Suresh Chandrashekar Homerton
Thomas Goff Mid Yorkshire NHS
Tim Clough Wrightington Wigan & Leigh Hospitals NHS FT
Tim Millar University Hospitals of Morecambe Bay
Tim Sinnett Chelsea and Westminster NHS FT
Timothy Williams Colchester General Hospital
Tom Ankers Countess of Chester Hospital NHS FT
Tristan Barton Royal United Hospital Bath NHS FT
Turab Syed Forth Valley Royal Hospital
Vigdis Thorisdottir West Suffolk Hospital, Bury St. Edmonds
Vivek Dhukaram University Hospitals Coventry & Warwickshire
William Reeve Royal Devon & Exeter
Williams Harries Southmead Hospital, Bristol

A live, continuously updated, list of surgeons who actively contribute to the registry, can be found on the BOFAS website: https://www.bofas.org.uk/clinician/bofas-registry/contributors

Section 2: Overview of PROM Scores

The BOFAS Registry allows foot and ankle surgeons to use the outcome scores to assess patients both pre- and post-operatively. The standard outcomes scores for each pathway are detailed in table 2.1. Other scores are available, depending on Surgeon choice, and may be configured in the Surgeon's registry settings. For example, one may choose to record MOXFQ & EQ-5D for all patient groups. Scores are recorded pre-operatively then routinely via email, SMS text, or in person, at regular intervals post-operatively, depending on the pathway.

EQ-5D-5L and EQ-5D Health VAS

EQ-5D is a standardised measure of health status developed by the EuroQol Group to provide a simple, generic measure of health for clinical and economic appraisal. Although routinely collected on the BOFAS Registry, we have omitted it from the report this year to concentrate on disease specific PROMs.

Manchester-Oxford Foot Questionnaire

The MOXFQ is a 16–item, self-administered, PROM instrument. It assesses how foot and ankle problems impair health-related quality of life and is completed pre- and post-operatively. It was originally intended for use for hallux valgus surgery and more recently proven for use with a variety of foot and ankle problems

The questionnaire consists of three domains/scales:

- Walking/standing – 7 items. (MOxFQ-W)
- Pain – 5 items. (MOxFQ-P)
- Social interaction – 4 items (MOxFQ-S)

The responses consist of a 5 point Likert scale (0-4), which ranges from no limitation (0) to maximum limitation (4). Scores for each domain are calculated by summating the responses in each domain.

The raw scale scores are then converted to a metric from 0-100, where 100 denotes the most severe. The raw scores can also be used to generate a summary Index score (MOxFQ- Index).

The questionnaire has been validated.

The Achilles Tendon Total Rupture Score

The ATRS is a validated, patient reported score for measuring outcome after total Achilles tendon rupture. There are 10 parameters, each of which is scored on a scale from 0 – 10, where 0 represents major limitations/ symptoms and 10 represents no limitations or symptoms.

Outcomes are recorded in the following domains:

- Are you limited because of decreased strength in the calf/ Achilles tendon/foot?
- Are you limited because of fatigue in the calf/ Achilles tendon/foot?
- Are you limited due to stiffness in the calf/Achilles tendon/foot?
- Are you limited because of pain in the calf/Achilles tendon/foot?
- Are you limited during activities of daily living?

- Are you limited when walking on uneven surfaces?
- Are you limited when walking quickly upstairs or uphill?
- Are you limited during activities that include running?
- Are you limited during activities that include jumping?
- Are you limited in performing hard physical labor?

The original article demonstrates good construct and convergent validity with both the FAOS and VISA-A scores. Intraclass correlation coefficient was 0.98 and the internal consistency was shown to be 0.96 (Cronbach's alpha) showing good test-retest reliability (Nilsson-Helander K et al, 2007).

A modified, 'cross cultural' version of the score was validated in the English population by Carmont et al, where it was shown to have excellent reliability (Carmont M et al 2012). The minimal detectable change was 6.75 points.

The BOFAS Registry uses the original Swedish/English language version. There were no significant differences in results comparing the 'cross cultural' & Swedish versions (Carmont M et al 2012).

The Minimally Important Change (MIC) was determined for the Dutch version of the score (Dams OC et al 2020). Using an anchor-based approach they showed MICs of 13.5 (cf EQ-5D-5L mobility), 25.5 (cf EQ-5D-5L usual activities) and 28.5 (cf GRoC).

The Achilles Tendon Rupture Repair Score

Not to be confused with the ATRS above, the Achilles Tendon Rupture Repair Score (AS) was originally described by Leppilahti et al in 1998 for measurement of the outcome of surgically treated Achilles ruptures. The version provided by the registry uses the modification described by Hutchison et al who, in lieu of an isokinetic dynamometer, used a single heel raise test to assess muscle strength (Hutchison AM et al 2015).

Outcomes are recorded in the following domains:

- Pain
- Stiffness
- Calf muscle weakness (subjective)
- Footwear restrictions
- Active range of motion difference between ankles
- Subjective result
- Isokinetic muscle strength (modification)

The maximum score is 100 indicating no impairment, with 0 representing a poor result.

To the best of the authors' knowledge, the score and its modifications have not been validated and MIC not determined.

As this outcome measure requires face to face review it is acknowledged that it is optional, should those facilities exist.

Olerud & Molander Ankle Score (OMAS)

The Olerud & Molander Ankle Score is a nine item, disease specific, outcome score designed to evaluate symptoms after an ankle fracture. The scale is a functional rating with a maximum score of 100, indicating an unimpaired ankle.

Subjective outcomes are recorded in the following parameters:
Pain, Stiffness, Swelling, Stair climbing, Running, Jumping, Squatting, Use of supports, Work/ADL.
The original article describes significant correlation with patients' reported outcomes on a linear analogue scale, range of motion, presence of osteoarthritis and presence of dislocations (Olerud & Molander, 1984).

There is evidence for test-retest reliability and construct validity for the English, Swedish & Turkish versions (Garratt 2018, Nilsson 2013, Turhan 2017). The Smallest Detectable Change (SDC) is 20.6: this indicates the level of change that can be considered a real difference (Garratt 2018).

Victorian Institute of Sports Assessment

The VISA-A outcome score is specific to Achilles tendinopathy, originally described by Robinson et al, 2001. The score consists of 8 questions measuring domains of pain, function in daily living and sporting activity. The maximum score is 100, with high scores indicating a good outcome. The original article reported good reliability and stability in a sporting population, however evidence of reliability has not been established in the non-sporting population. One may therefore wish to consider additional PROMS in this group. The MIC has been estimated for patients with Insertional Achilles Tendinopathy (see below).

Minimally Important Change

Whilst changes in outcome scores may be statistically significant, this may or may not, represent a clinically significant difference in patients' symptoms. The Minimally Important Change (MIC) represents a change in the outcome score that is clinically relevant.

The MIC for the EQ—5D index score has been shown to be 0.074 (Walters 2005).

For the MOXFQ components Walking/Standing, Pain, Social Interaction the MICs are 16, 12 and 24 respectively (Dawson 2012).

The MIC for OMAS has been estimated at 9.7 (McKeown et al, 2021).

The MICs for the ATRS range from 13.5 to 28.5 and are documented above (Dams OC et al, 2020).

For the VISA-A an MIC of 6.5 points has been suggested for Insertional Achilles Tendinopathy (McCormack et al, 2015).

Data Analysis

As the number of cases are small, only summary data is presented in this report. As the numbers grow, we aim to provide more robust, statistical analysis. For the 1st MTPJ fusion and Ankle Fusion pathways the criteria are clearly defined, and analysis of the variables can be achieved. The general Foot and Ankle pathway is more difficult to analyse because of the sheer variety of procedures undertaken. However, in this report, we have undertaken a limited analysis based on four common diagnoses found within the pathway. We are working with Amplitude to try to achieve consistency, particularly with definition of procedures, to help us achieve this in the future. All box-plot graphs illustrate median and range.

Statistical Analysis

Where statistical tests were performed the following rules were followed: Continuous variables were tested for normality distribution and presented as means and 95% confidence intervals. Categorical and qualitative variables are expressed as numbers and percentages. The Student t-test and ANOVA was used for continuous variables if the criteria for normality and equality of variances were fulfilled. Alternatively, the Mann-Whitney U test was performed if independent variables or the Wilcoxon signed-rank test if dependent variables. Categorical variables were analysed using the Chi-square test for sample sets greater than 5, otherwise the Fisher's exact test was used. Missing data were included in flowcharts and descriptive analyses, allowing denominators to remain consistent in calculations. All graphical representation illustrates patients with complete data sets, however tabulated data contains total avergaes for the collected variable.

All data was assessed using SPSS Version 26.0 (SPSS Inc., IBM, Chicago, IL). Where expressed, a 95% confidence interval has been used.

Table 2.1 - Standard PROMS for each Pathway

Pathway	MOXFQ	EQ-5D	VAS Pain	OMAS	ATRS	AS	VISA-A
1st MTP Fusion	✓	✓	✓				
Ankle Arthrodesis	✓	✓	✓				
Foot & Ankle Generic	✓	✓	✓				
TAR Primary	✓	✓					
TAR Revision	✓	✓					
Achilles Rupture					✓	✓	
Achilles Tendinopathy		✓					✓
Trauma Ankle Fracture		✓	✓	✓			
Trauma Foot & Ankle	✓	✓	✓				

Section 3: 1st Metatarsophalangeal Joint Arthritis

1st Metatarsophalangeal Joint Fusion

A total of 1,595 1st MTPJ Fusion pathways have been instituted since it originally opened, an increase of over 500 over the course of the last two years. Previously, the completion rate for pre-operative PROMS was reasonable, at approximately 80% across the 3 outcomes however, with the import of external data sets, this rate has fallen. Complete PROMS outcomes were found for approximately 45%, 26% and 19% of MOXFQ scores at baseline, six months post-operative and 12 months post operative respectively. For VAS Pain scores findings were similar at 54%, 29% and 22% at the same stages.

The average age was 65.85 (SD 11.71), recorded gender was 34% male and 66% female. BMI was recorded in 510 pathways, with the majority of patients being either overweight or obese (BMI ≥25). The operation was undertaken on the right foot in 53% of individuals and left side in 43% of individuals, in the remainder the side was not recorded. Of the 476 pathways where smoking status was recorded: 7% of individuals were smokers, 21% were ex-smokers and 72% were non-smokers. The numbers for smoking were too small to make any comparison in outcomes.

Where recorded, 93% of patients were classed as primary procedures, with 5% as revision procedures, <1% as second revision, <1% conversion from arthroplasty and <1% as 'other' indication. Additional procedures were recorded in 252 cases: 141 of these were lesser toe corrections, 44 were recorded as either Weil's, Forefoot Arthroplasties or Forefoot reconstructions, and a further 71 were recorded as having 'other' procedures.

The MOXFQ components revealed a clinically relevant improvement in symptoms at 6- and 12-months post-operative, with changes greater than the MIC the Pain and Walking/Standing domains. The Pain scores improved from a pre-operative baseline of 62.40 to 34.68 at 6 months post-operative and 31.54 at 12 months post-operative. The Walking/Standing scores improved from 61.83 to 35.58 and 30.12 at 6 and 12 months post operative respectively. The Social Interaction scores improved from 51.34 to 27.37 and 25.13 at 6 and 12 months post operative respectively (Table 3.1). The number of patients with recorded scores at 2 years is too small for meaningful analysis.

The VAS pain score again showed a significant improvement from 54.40 pre-operatively, to 29.25 and 24.27 at 6- and 12-months post-operative respectively (Table 3.2). Details of complications and revision surgery were inconsistently documented, and it is not possible to draw meaningful conclusions from the dataset as it currently stands.

MOXFQ 1st MTPJ Fusion

		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		776	459	344	775	459	346	764	448	340
Mean		62.40	34.68	31.54	61.83	35.58	30.12	51.34	27.37	25.13
95% Confidence Interval for Mean	Lower Bound	60.94	32.18	28.62	60.07	32.65	26.96	49.56	24.80	22.20
	Upper Bound	63.86	37.19	34.46	63.59	38.51	33.28	53.12	29.95	28.06
Median		65.00	35.00	25.00	64.00	29.00	25.00	50.00	19.00	13.00
Std. Deviation		20.73	27.32	27.52	24.99	31.97	29.86	25.03	27.73	27.49

VAS Pain 1st MTPJ Fusion

		Base line	6 Month	12 Month
Number		925	513	388
Mean		54.40	29.25	24.27
95% Confidence Interval for Mean	Lower Bound	52.89	26.87	21.67
	Upper Bound	55.91	31.64	26.87
Median		58.00	20.00	13.00
Std. Deviation		23.38	27.50	26.05

Table 3.1 and 3.2 - PROMS scores for 1st MTPJ Fusion

1st Metatarsophalangeal Joint Cheilectomy

Within the registry 182 1st MTPJ Cheilectomy procedures are recorded. 149 cases were isolated 1st MTPJ Cheilectomies, of which 70 cases were performed percutaneously or minimally invasively, 79 were performed using open techniques. In a further 12 cases microfracture was performed in addition to the cheilectomy, all of which were open. Moberg osteotomies were performed in addition to a cheilectomy in a further 19 cases, of which 15 were performed using percutaneous or minimally invasive techniques.

The MOXFQ components revealed a clinically relevant improvement in symptoms at 6- and 12-months post-operative, with changes greater than the MIC the Pain and Walking/Standing domains. The Pain scores improved from a pre-operative baseline of 51.36 to 33.39 at 6 months post-operative and 27.01 at 12 months post-operative. The Walking/Standing scores improved from 45.52 to 29.50 and 22.05 at 6 and 12 months post operative respectively. The Social Interaction scores improved from 40.38 to 23.41 and 16.22 at 6 and 12 months post operative respectively (Table 3.3). The Social score change was above MIC at 12 months but not at 6. The number of patients with recorded scores at 2 years is too small for meaningful analysis. The VAS pain score again showed a significant improvement from 43.73 pre-operatively, to 25.79 and 22.83 at 6- and 12-months post-operative respectively (Table 3.4). Details of complications and revision surgery were inconsistently documented, and it is not possible to draw meaningful conclusions from the dataset as it currently stands.

		MOXFQ 1st MTPJ Chielectomy								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		187	118	87	187	118	87	184	116	86
Mean		51.63	33.39	27.01	45.52	29.50	22.05	40.38	23.41	16.22
95% Confidence Interval	Lower Bound	48.56	29.11	22.23	41.72	24.50	16.15	36.89	18.94	11.28
	Upper Bound	54.70	37.67	31.80	49.32	34.50	27.94	43.87	27.89	21.16
Median		55.00	30.00	20.00	46.00	21.00	7.00	38.00	16.00	6.00
Std. Deviation		21.29	23.46	22.46	26.33	27.41	27.65	24.00	24.34	23.05

		VAS Pain 1st MTPJ Cheilectomy		
		Base line	6 Month	12 Month
Number		217	141	100
Mean		43.73	25.79	22.83
95% Confidence Interval for Mean	Lower Bound	40.56	21.88	18.33
	Upper Bound	46.91	29.71	27.33
Median		42.00	19.00	13.50
Std. Deviation		23.72	23.52	22.70

Table 3.3 and 3.4 - PROMS scores for 1st MTPJ Cheilectomy

1st Metatarsophalangeal Joint Arthroplasty

20 patients were registered on 1st MTPJ Arthroplasty pathways, for which we have PROMS on 17. The MOXFQ components did not show a clinically significant change in scores, from baseline, at any point post operatively (Tables 3.5). The VAS pain scores did show an improvement at 6 months but the 12 months results were trending towards the baseline (Table 3.6). Details of complications and revision surgery were inconsistently documented, and it is not possible to draw meaningful conclusions from the dataset as it currently stands.

MOXFQ 1st MTPJ Arthroplasty

		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		17	11	10	17	11	10	16	11	8
Mean		55.88	47.73	59.50	55.29	50.09	58.40	39.56	33.09	50.25
95% Confidence Interval for Mean	Lower Bound	46.92	31.25	38.28	44.39	29.20	34.99	27.66	17.73	19.52
	Upper Bound	64.84	64.21	80.72	66.20	70.98	81.81	51.47	48.46	80.98
Median		55.00	45.00	67.50	57.00	50.00	69.50	38.00	38.00	56.50
Std. Deviation		17.43	24.53	17.83	21.22	31.10	32.73	22.34	22.87	36.76

VAS Pain 1st MTPJ Arthroplasty

		Base line	6 Month	12 Month
Number		23	13	11
Mean		54.74	38.92	49.73
95% Confidence Interval for Mean	Lower Bound	45.69	31.61	18.33
	Upper Bound	63.79	67.85	27.33
Median		55.00	30.00	50.00
Std. Deviation		20.93	28.54	26.97

Table 3.5 and 3.6 - PROMS scores for 1st MTPJ Arthroplasty

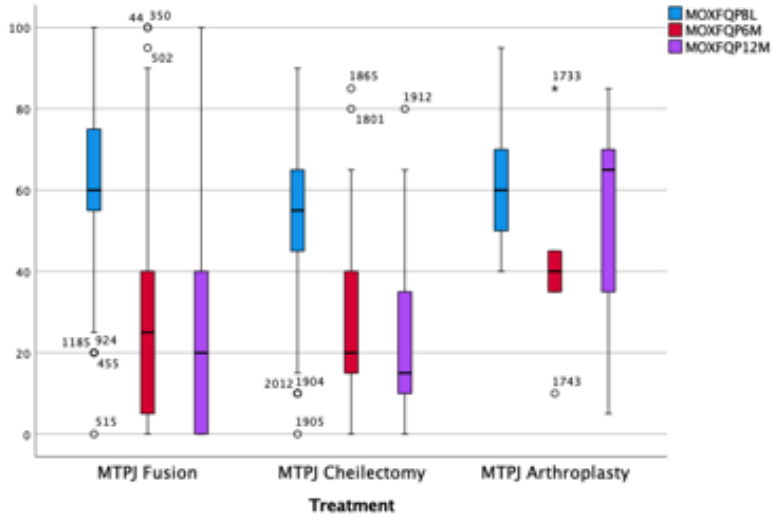


Figure 3.1 - MOXFQ Pain at base line, 6 months and 12 months for MTPJ Fusion, cheilectomy and arthroplasty

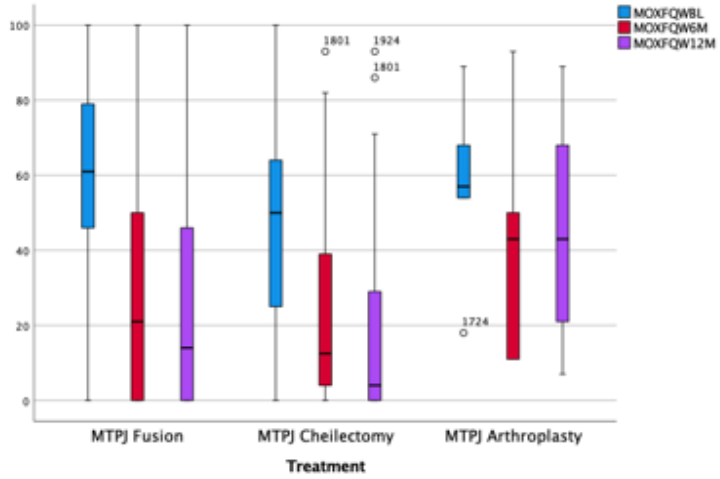


Figure 3.2 - MOXFQ Walking at base line, 6 months and 12 months for MTPJ Fusion, chielectomy and arthroplasty

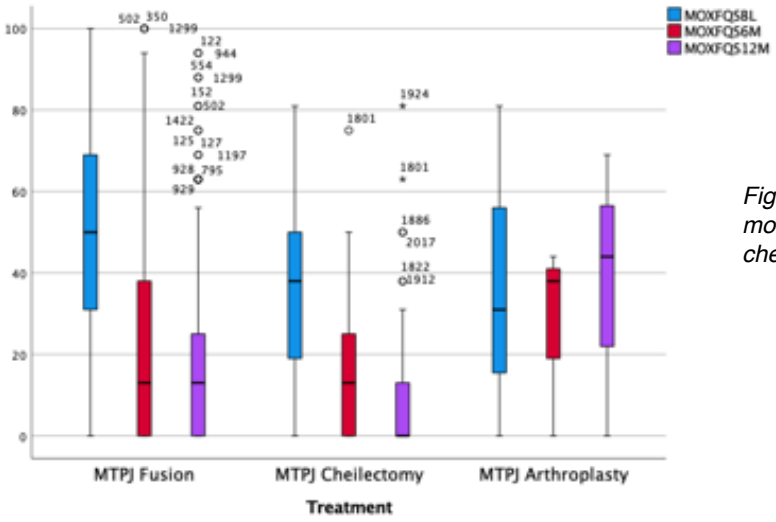


Figure 3.3 - MOXFQ Social at base line, 6 months and 12 months for MTPJ Fusion, cheilectomy and arthroplasty

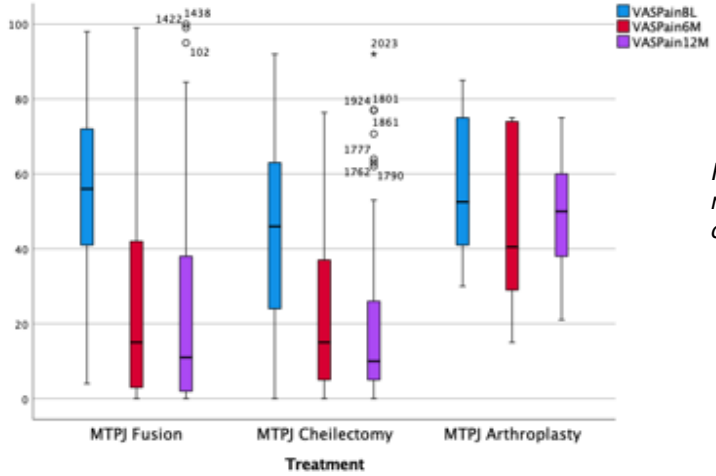


Figure 3.4 - VAS Pain at base line, 6 months and 12 months for MTPJ Fusion, cheilectomy and arthroplasty

Comparison of 1st MTPJ Outcomes

The MOXFQ Scores for the 3 groups are shown in figures 3.1 - 3.3 and VAS Pain scores in figure 3.4. We acknowledge that these outcomes were not produced as the result of a trial, but believe that broad comparison is warranted to direct future research. On testing, the null hypothesis, that the PROMS were the same across the categories, was rejected. It is noted that the 1st MTPJ Arthroplasty group does not show the same improvement in outcomes at 6 and 12 month postoperatively. The difference between the 1st MTPJ Arthroplasty MOXFQ means are greater than the MIC for all domains at 12 months in comparison with both the 1st MTPJ Cheilectomy and 1st MTPJ Arthrodesis outcomes. Readers are directed to NICE IPG727 (https://www.nice.org.uk/guidance/ipg727) which requires those having synthetic cartilage implant insertion for 1st MTPJ Arthritis to have their details recorded on the BOFAS Registry and that local review is undertaken. We would further recommend that all 1st MTPJ Arthroplasty implants are entered on to the registry to allow National level reporting.

Hallux Valgus

There has again been a increase in the number of patients entered onto the Hallux Valgus pathway. Whereas the 2023 registry included 519 enrolled patients with full MOXFQ baseline data, we now have baseline data for 639 patients enrolled in this pathway, with 6 month data being recorded for 446 (70%), and results at one year in 325(51%). There was a preponderance for female sex amongst patients(86%). A variety of operative strategies were recorded and the main procedures with available data were open techniques (405) MIS techniques (213) and Lapidus procedure (21). Improvement in scores was highly significant in all MOXFQ domains and the VAS pain score independent of procedure.

As seen from the graphs in figures 4.1 and 4.2, although there was significant improvement in MOXFQ scores with time, there was no difference between open and MIS procedures. There was however, a significantly better improvement of scores with both open and MIS procedures when compared to Lapidus procedure (p= .008 and .032).

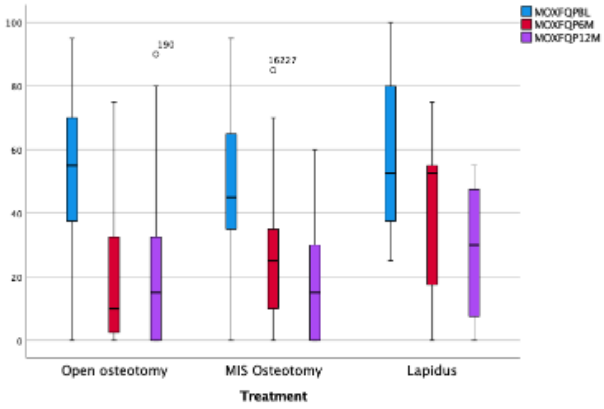
It should be noted that there may be significant confounding factors to these results as there were only a small number of Lapidus procedures logged and this procedure may have been chosen due factors which would predispose to a poorer outcome. Another factor to consider is the ceiling effect of benefit from hallux valgus correction as although the MOXFQ is validated to show improvement after hallux valgus surgery, the instrument was not created to compare between procedures and as both open and MIS techniques give results almost within the Minimally important clinical difference (MIC) of a normal foot then perhaps more specific instruments, other parameters, or specific subpopulations are required to compare between open and MIS bunion procedures in the future.

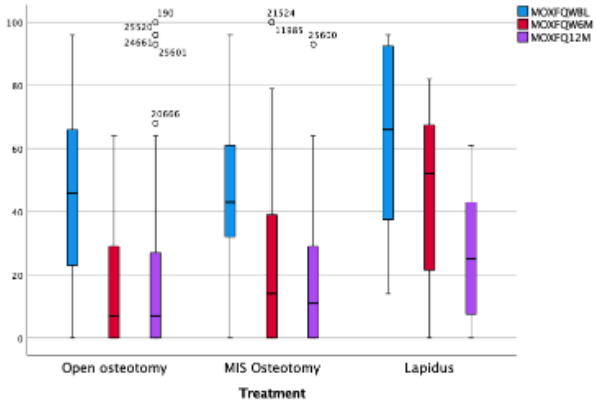
			Pain			Walking			Social		
			Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Open	**Number**		405	285	180	405	285	180	400	279	178
	Mean		53.66	29.55	24.49	49.96	26.05	22.33	47.39	22.81	19.19
	95% Confidence Interval	Lower Bound	51.47	26.71	21.07	47.47	23.02	18.34	44.96	19.84	15.69
		Upper Bound	55.85	32.4	27.92	52.44	29.08	26.32	49.81	25.79	22.69
	Median		55	30	20	54	21	7	44	13	13
	Std. Deviation		22.384	24.396	23.29	25.42	26.004	27.123	24.693	25.251	23.662
MIS	**Number**		213	139	122	213	139	122	213	139	122
	Mean		48.71	25.94	22.34	44.4	23.23	19.48	43.7	20.46	15.12
	95% Confidence Interval	Lower Bound	45.61	22.21	18.6	40.76	18.92	15.31	40.34	16.37	11.71
		Upper Bound	51.81	29.66	26.08	48.04	27.54	23.64	47.06	24.55	18.54
	Median		50	25	17.5	46	14	11	44	13	6
	Std. Deviation		22.956	22.227	20.861	26.923	25.71	23.255	24.882	24.388	19.058
Lapidus	**Number**		21	22	23	22	22	23	21	22	23
	Mean		56.9	34.09	30.43	63.33	36.91	29.96	58.29	25	29.48
	95% Confidence Interval	Lower Bound	47.26	23.79	19.53	52.19	24.53	18.85	47.42	14.47	18.28
		Upper Bound	66.55	44.39	41.34	74.47	49.29	41.06	69.15	35.53	40.68
	Median		60	32.5	30	71	43	25	63	22	25
	Std. Deviation		21.182	23.23	25.222	24.471	27.927	25.675	23.875	23.747	25.902

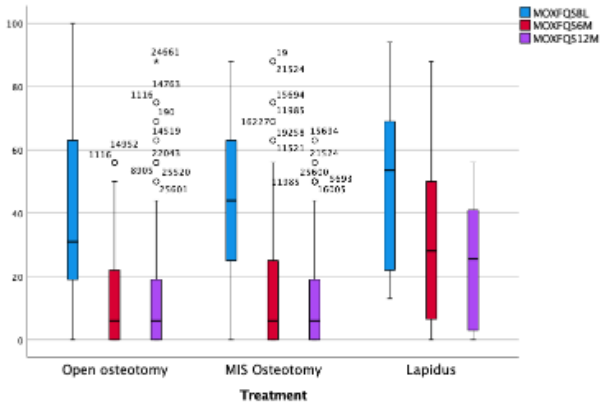
Table 4.1 - MOXFQ for open, MIS and Lapidus treatment of hallux valgus

			VAS Pain Hallux Valgus		
			Base line	6 Month	12 Month
Open	**Number**		543	352	223
	Mean		43.7	21.96	20.3
	95% Confidence Interval	Lower Bound	41.6	19.54	17.11
		Upper Bound	45.8	24.38	23.49
	Median		48	14.95	10
	Std. Deviation		24.933	23.063	24.191
MIS	**Number**		292	185	159
	Mean		42.8	18.45	18.99
	95% Confidence Interval	Lower Bound	39.83	15.46	15.49
		Upper Bound	45.77	21.44	22.5
	Median		44.8	12.5	10
	Std. Deviation		25.803	20.631	22.355
Lapidus	**Number**		39	30	21
	Mean		52.19	26.72	16.36
	95% Confidence Interval	Lower Bound	44.62	17.12	7.29
		Upper Bound	59.77	36.32	25.43
	Median		52	20	10
	Std. Deviation		23.372	25.717	19.927

Table 4.1 - VAS Pain for open, MIS and Lapidus treatment of hallux valgus







Figures 4.1, 4.2 and 4.3 - MOXFQ Pain, Walking, and Social at base line, 6 months and 12 months for Hallux Valgus treatment

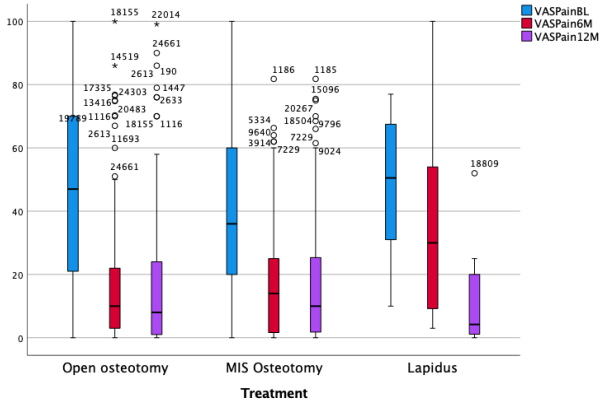


Figure 4.4 - VAS Pain at base line, 6 months and 12 months for Hallux Valgus treatment

Section 5: Ankle Arthritis

Ankle osteoarthritis is a common condition that affects 1-4% of all adults. (Murray et al, 2018). End stage ankle arthritis can cause significant pain and disability comparable to end stage kidney disease and congestive heart failure (Saltzman CL et al, 2006). The treatment for end stage osteoarthritis is Ankle arthrodesis or Total Ankle Joint replacement. Both treatments have shown to be clinically effective. In response to the Get It Right First Time programme (GIRFT 2015) Ankle Arthritis Networks are being developed nationally to share expertise, reduce variation, drive down cost and improve patient outcomes.

These networks will enable patients to have equal access to high quality care regardless of their geography. The registry has shown a year on year increase in the number of patients with TAR and ankle arthrodesis. It is now possible to not only report on the individual pathways but also for comparative data to be assessed.

Primary Ankle Arthroplasty

Within the registry, 286 TAR pathways have been instituted since the pathway went live in 2016. This is a 20% increase since last year and reflects the impact on elective surgery due to the Covid-19 pandemic. There were 169 males and 117 females. The average age at the time of implantation was 70.1 years (range 32-92 years) and the average BMI was 28.8. 6.8% of patients were active smokers, 19.6% were ex smokers and 73.6% non smokers. The most common indication for TAR was osteoarthritis (92.3%), with 6.7% inflammatory joint disease and 1.0% other (including avascular necrosis of talus).

The MOXFQ score was completed at baseline in 149 patients, 86 have completed 6 month and 85 patients have completed 12 months. Where the implant type was recorded, Infinity accounted for 63%, STAR 27%, Zenith 5% and INBONE 5% of cases.

The average improvement in the MOXFQ -Pain score was 67.7 pre-operative to 36.2 at 1 year (improvement 31.5), MOXFQ Walking/Standing 83.2 pre-operative to 40 at 1 year and MOXFQ-Social 63 pre-operative to 30 at 1 year (Table 5.1, Figures 5.1-5.3). The average improvement in the VAS pain score was 6.4 pre-operative to 2.7 at 1 year (Table 5.2). In all domains of the MOXFQ the MIC was exceeded when comparing the baseline and 12 month post-operative figures.

		MOXFQ Ankle Arthroplasty								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		149	86	85	149	86	87	146	85	85
Mean		67.68	34.07	36.16	83.2	41.79	39.86	63.23	30.35	30.44
95% Confidence Interval	Lower Bound	64.67	29.33	30.41	80.43	35.32	32.79	59.46	24.47	24.3
	Upper Bound	70.7	38.81	41.92	85.97	48.27	46.93	67.01	36.23	36.57
Median		70	32.5	32.5	86	43	39	63	25	25
Std. Deviation		18.641	22.09	26.851	17.109	30.201	33.181	23.094	27.263	28.431

		VAS Ankle Arthroplasty		
		Base line	6 Month	12 Month
		173	101	89
Mean		64.19	26	26.9
95% Confidence Interval	Lower Bound	61.36	21.25	21.57
	Upper Bound	67.01	30.75	32.23
Median		69	16.2	19
Std. Deviation		18.828	24.072	25.3

Table 5.1 and 5.2 - PROMS scores for Ankle Arthroplasty

Ankle Arthrodesis

45 hospitals and 48 surgeons (pathway owners) currently contribute to the pathway. Within the registry, 638 AA pathways have been instituted since the pathway went live in 2016. This is a 38% increase since the previous report in 2023. Completed procedure forms were available for 362 cases, that is 61% of the total pathways. 66% were males and 32% females. The MOXFQ score was completed at baseline in 336 patients, 167 have completed 6 month and 118 patients have completed 12 months. The mean age of the cohort was 65 yrs (range 52-79).

The average BMI was 30.45 (range 29.8 to 31.1). Smoking was recorded in 7% of individuals, ex-smoker in 18% of individuals and non-smoker in 75% of individuals. The most common indications for fusion were primary arthritis and post-traumatic arthritis. Other indications included inflammatory arthritis, avascular necrosis of talus and pilon fracture.

Primary fusion accounted for 96% of cases and revision in 3% cases. Arthroscopic fusions accounted for 53% of the recorded pathways and 43% were open. Mini-open arthroscopic assisted was used in 3.7% cases.

Ankle fusion fixation was undertaken using cannulated screws in 75% of patients. The other forms of fixation include plates (14%), an external fixator (1%), IM nail (3%) and staples. In those individuals undergoing fusion using screws, 2 screws were used in 81% and 3 screws in 10%. Most screws were inserted in parallel (79%) with some inserted crossed (12%). The most common application for the screws was medial to lateral (62%) and lateral to medial (15%). All arthroscopic fusions were fixed using screws. Open fusions used cannulated screws (44%), plate and screws (30%), and IM nail (5%). Others used a mixture of cannulated screws with plates, cables, and IM nail. The remaining with an external fixator, IM nail and staples.

The MOXFQ Pain, Walking and Social interaction indices all improved significantly from baseline to 12 months as illustrated in table 5.3 and figures 5.1-5.3. This was greater than the MIC when comparing baseline with the outcome at 12 months.

The VAS Pain score significantly improved from a baseline 63.94 to 36.16 at six months and 29.76 at 12 months (Table 5.4, Figure 5.4). This was also clinically relevant with the change being greater than the MIC.

Ankle Arthrodesis

		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		339	168	119	338	168	119	331	164	116
Mean		68.70	39.94	36.26	81.52	52.24	44.34	62.13	37.82	34.82
95% Confidence Interval for Mean	Lower Bound	66.65	35.9	31.45	79.49	47.49	38.62	59.55	33.49	29.18
	Upper Bound	70.75	43.98	41.08	83.55	56.99	50.07	64.71	42.142	40.45
Median		70	35	35	86	54	46	63	38	31
Std. Deviation		19.18	26.52	26.52	19	31.18	31.53	23.90	28.05	30.64

VAS Pain Ankle Arthrodesis

		Base line	6 Month	12 Month
Number		327	165	114
Mean		63.94	36.16	29.76
95% Confidence Interval for Mean	Lower Bound	61.52	31.88	25.01
	Upper Bound	66.35	40.43	34.51
Median		69	27	24.95
Std. Deviation		22.241	27.787	25.6

Table 5.3 and 5.4 - PROMS scores for Ankle Arthrodesis

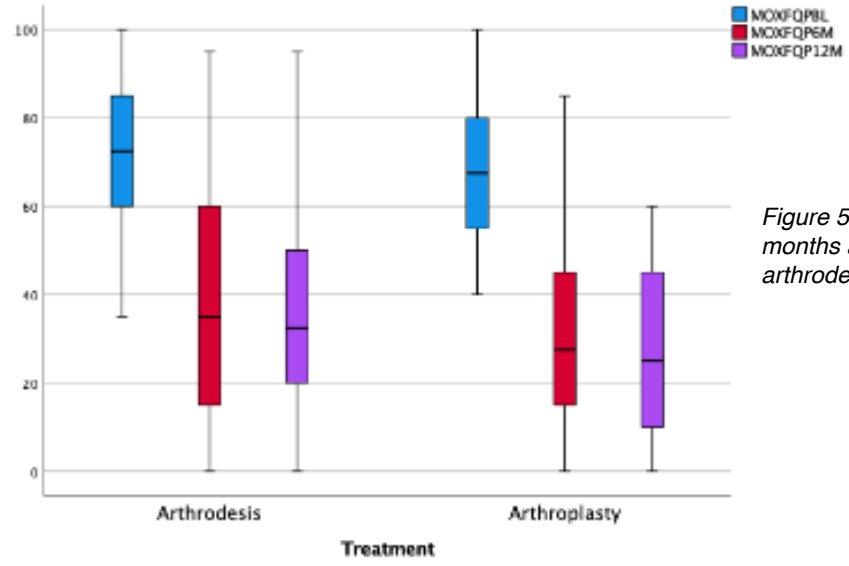


Figure 5.1 - MOXFQ Pain at base line, 6 months and 12 months for Ankle arthrodesis and arthroplasty

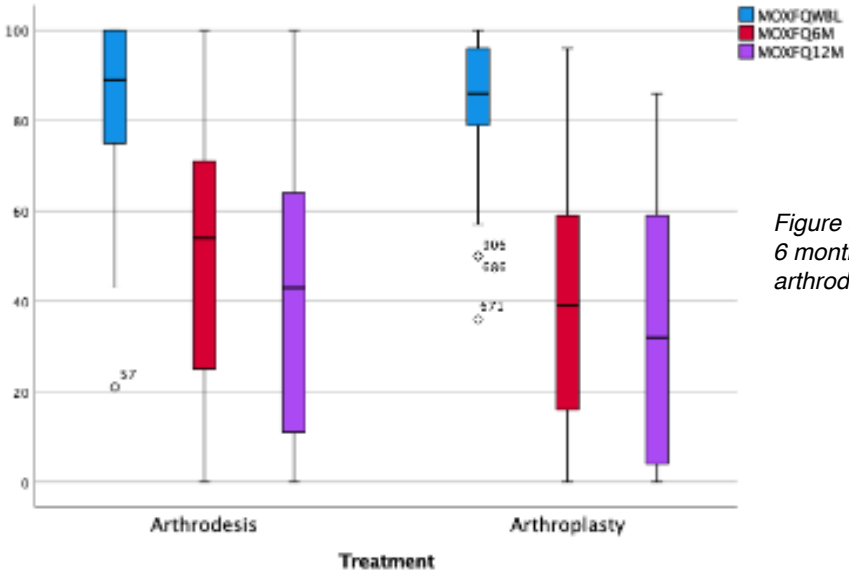


Figure 5.2 - MOXFQ Walking at base line, 6 months and 12 months for Ankle arthrodesis and arthroplasty

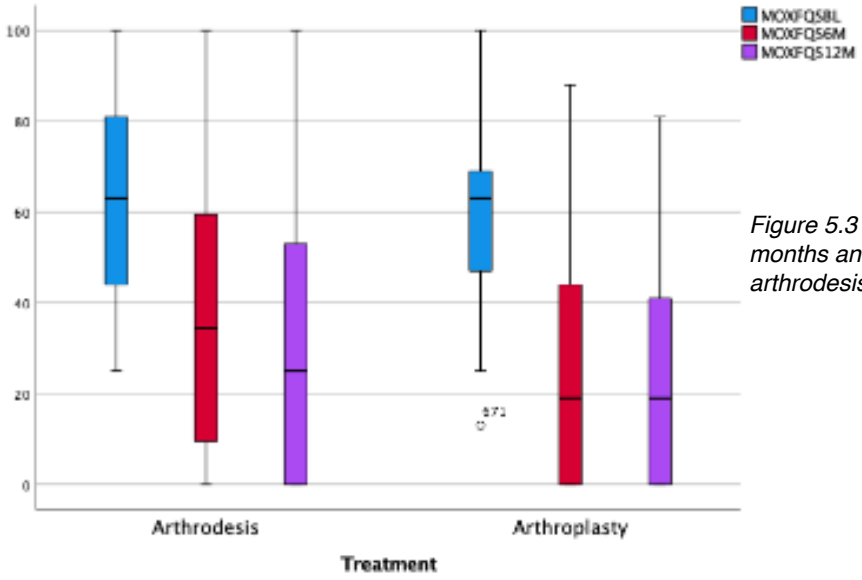


Figure 5.3 - MOXFQ Social at base line, 6 months and 12 months for Ankle arthrodesis and arthroplasty

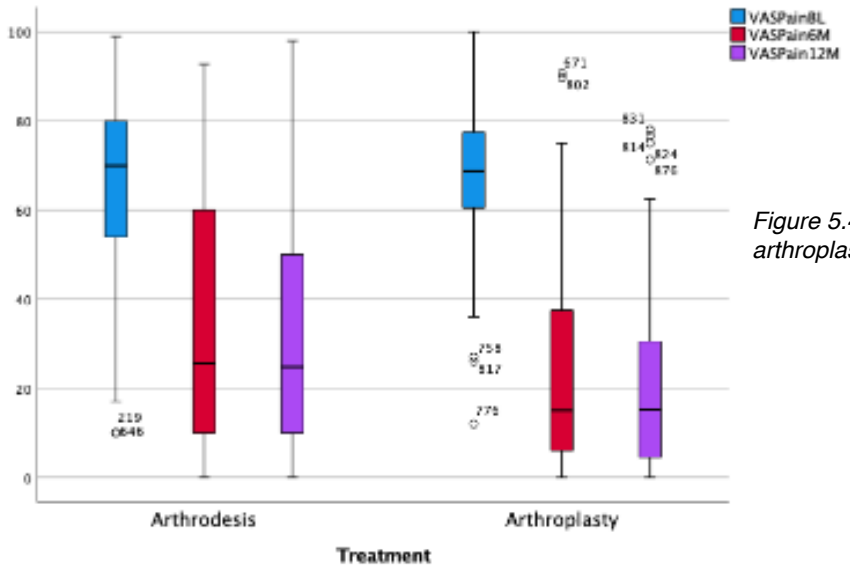


Figure 5.4 - Ankle arthrodesis and arthroplasty, VAS Pain

Comparison of Ankle Arthritis Treatment Oucomes

Across all PROM domains and at all time points, there was no significant difference between ankle replacement or ankle arthrodesis in the treatment of ankle arthritis. There was also no significant difference in any PROM score across all time points, when comparing ankle arthrodesis performed by arthroscopy and those performed open.

It should be noted that no information is avaiable regarding deformity, other joint disease, or radiographic success of any patient contained in these pathways and thus the data should be viewed as a generalisation of the PROMS outcomes for these treatments.

Section 6: Achilles Tendon Rupture Pathway

The Achilles Tendon Rupture pathway was opened in 2020, since then a total of 242 pathways have been created. This pathway allows both operative and non-operative management to be recorded, along with radiological findings. The standard PROMS for this pathway are the Achilles Tendon Total Rupture Score (ATRS) and Achilles Tendon Rupture Repair Score (AS) although other scores, such as MOXFQ or EQ-5D, may be added in the pathway owner's registry settings, if desired.

Overall the mean age was 49.09 (SD 14.23) and the majority of patients were male (82%). The BMI was poorly recorded in the non-operative pathways, however in the surgically managed pathways documentation was more consistent. Overall the mean BMI was 28.8 (Range 19.4-49.8), in the operatively treated group the mean was 28.31 (Range 19.4-49.8) and in the non-operative group 28.75 (Range 19.9-44.8). 80% were non-smokers, 9% had previously smoked, 7% were active smokers, 4% used e-cigarettes and 2% nicotine patches or gum. The left side was affected in 52% and the Right in 48% of cases.

Where documented, most ruptures (89%) occurred after an injury. Acute ruptures predominantly affected the body of the Achilles tendon (61%), with musculotendinous ruptures (14%), chronic ruptures (19%), re-rupture after conservative treatment (4%) and insertional ruptures (2%) occurring less frequently. 28% of Achilles ruptures were managed operatively, of these 41% underwent an open repair, 36% a mini-open repair and 20% a percutaneous repair. In the Mini-Open repair cohort the indication was an acute body rupture in 92% of cases, in the Open repair cohort 43% of cases were for an Acute body or Insertion rupture, 39% were for a Chronic rupture and 14% for re-rupture after conservative management. One must therefore be mindful in drawing direct comparisons between the outcomes of the three groups. Detail of non-operative management was inconsistently recorded, the majority of patients being initially immobilised in a cast. Subsequent cast removal and splint application was not recorded in sufficient detail to comment.

The pathway allows for detailed recording of the ultrasound findings, with the ankle in different positions, gap size and rupture site. Registry users are encouraged to review the parameters with their radiologists and radiographers to ensure reporting is standardised. However, many centres do not use US as part of their treatment plan. Currently this data is insufficient for meaningful interpretation.

The PROMS used are the Achilles Tendon Total Rupture Score (ATRS) and the Achilles Tendon Rupture Repair Score (AS) (Tables 6.1 & 6.2, Figure 6.1). The results have been broken down by treatment type: Conservative, Mini Open & Percutaneous (MIS) and Open surgery.

Regarding the ATRS outcomes, all methods of treatment show improvement above the MIC comparing 3 and 12 month post-operative figures. The results for Conservative & MIS groups are in keeping with those published in other series (Carmont et al, 2012). Whilst the scores in the Open group are lower, the numbers are small and the indications different to the other groups. Details of complications and revision surgery were inconsistently documented, and it is not possible to draw meaningful conclusions from the dataset as it currently stands.

					95% Confidence Interval for Mean		
		Number	**Mean**	**Median**	**Lower Bound**	**Upper Bound**	**Std. Deviation**
AS 3 Months	Conservative	25	54.2	55	49.92	58.48	10.376
	MIS	7	46.43	45	30.93	61.93	16.762
	Open	2	37.5	37.5	-57.8	132.8	10.607
AS 6 Months	Conservative	99	63.13	65	60.22	66.04	14.596
	MIS	15	60	65	49.23	70.77	19.457
	Open	3	56.67	50	16.74	96.59	16.073
AS 12 Months	Conservative	58	65.95	67.5	61.74	70.15	15.989
	MIS	13	64.62	60	53.76	75.47	17.965
	Open	3	46.67	45	27.69	65.64	7.638

Table 6.1 - AS for Achilles Tendon Ruptures

					95% Confidence Interval for Mean		
		Number	**Mean**	**Median**	**Lower Bound**	**Upper Bound**	**Std. Deviation**
ATRS 3 Months	Conservative	40	46.35	39	39.91	52.79	20.139
	MIS	14	44.5	38	32.23	56.77	21.249
	Open	3	16	21	-19.22	51.22	14.177
ATRS 6 Months	Conservative	104	66.79	68.5	63.14	70.43	18.746
	MIS	19	65.16	63	57.67	72.65	15.539
	Open	5	49	49	12.6	85.4	29.317
ATRS 12 Months	Conservative	63	78.9	84	74.15	83.66	18.887
	MIS	16	78.31	79.5	70.98	85.65	13.768
	Open	5	58.2	67	34.91	81.49	18.754

Table 6.2 - ATRS for Achilles Tendon Ruptures

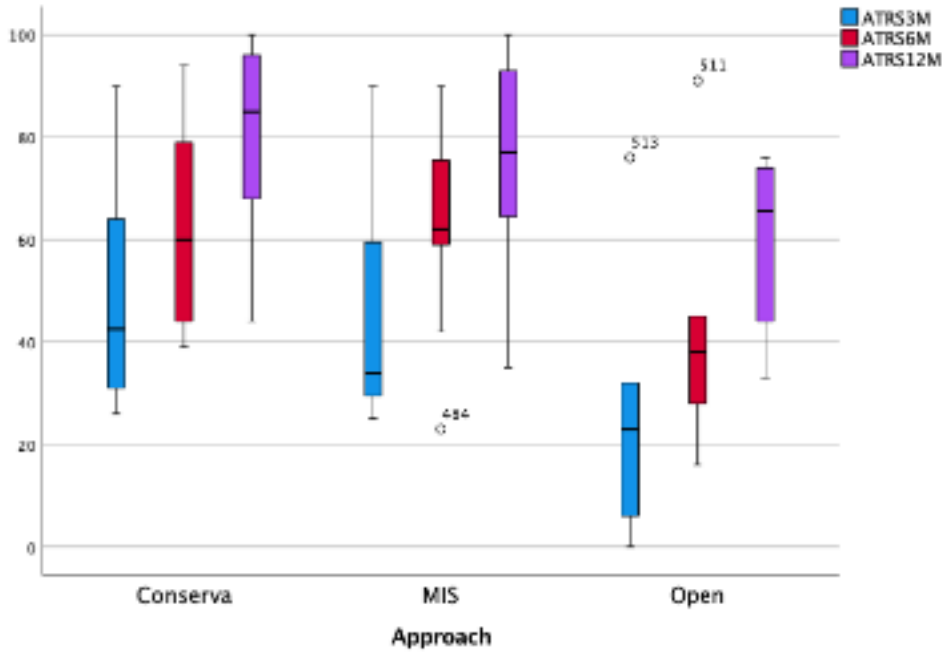


Figure 6.1 - ATRS Box Plots for Achilles tendon ruptures treated by conservative, open and MIS methods

Section 7: Mortons Neuroma

There were 184 patients registered with interventions for Morton's neuroma on the registry. 88.6% (n=163) were resection of Morton's neuroma, 1.6% (n=3) decompression of neuroma and 6.5% (n=12) Cryotherapy of Morton's neuroma. 70.7% (n=130) were female. Mean age was 56.65 years and mean BMI was 27.23.

At baseline, 85 patients had recorded PROMS, 68 provided data at 6 months and 44 at one year. VAS Pain at baseline and follow up intervals of 6 and 12 months post intervention are displayed in table 7.2 and figure 7.4. MOXFQ scores at baseline and follow up intervals of 6 and 12 months are displayed in table 7.1 and figures 7.1-7.3.

Even with small numbers, there were statistically significant improvements in all MOXFQ domain scores and VAS Pain at 6 months following intervention.

Improvement in MOXFQ at 6 months exceeded the MIC for all domains. Data completion at 12 months was 51.7% and did not show any statistically significant change between 6 months and 12 months.

		MOXFQ								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		85	68	44	85	68	44	85	68	44
Mean		46.75	20	21.3	60.89	25.29	22.32	57.76	29.71	24.09
95% Confidence Interval for Mean	Lower Bound	41.49	13.86	12.62	55.83	18.3	13.22	53.74	23.23	15.66
	Upper Bound	52.02	26.14	29.97	65.96	32.29	31.42	61.78	36.18	32.52
Median		44	6	9.5	61	14	5.5	60	25	15
Std. Deviation		24.42	25.35	28.542	23.50	28.90	29.93	18.64	26.76	27.73

		VAS Morton's Neuroma		
		Base line	6 Month	12 Month
		85	68	44
Mean		56.43	24.34	20.06
95% Confidence Interval for Mean	Lower Bound	51.91	18.91	13.51
	Upper Bound	60.94	29.77	26.6
Median		60	15.5	12
Std. Deviation		22.619	24.243	23.519

Table 7.1 and 7.2 - PROMS scores for Mortons Neuroma

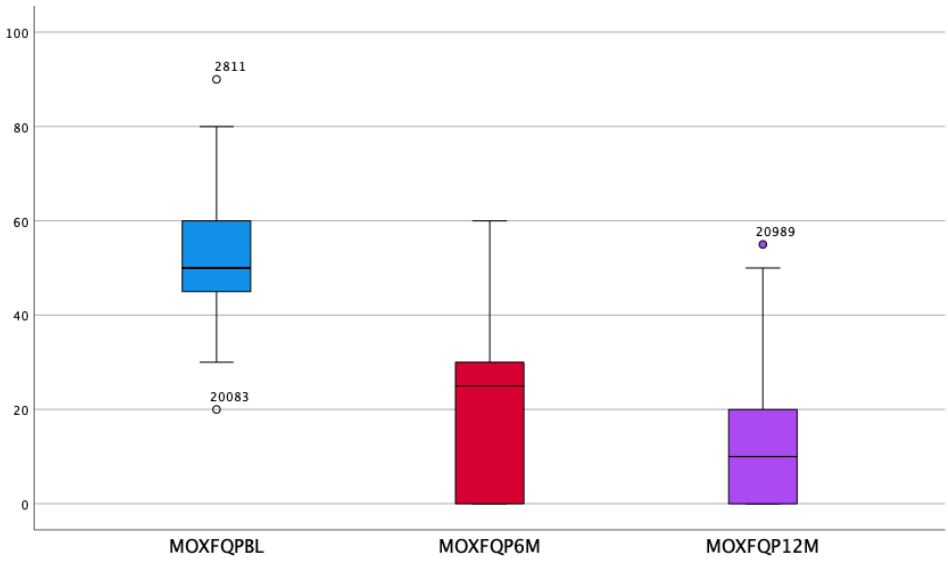


Figure 7.1 - MOXFQ Pain at base line, 6 months and 12 months for Mortons Neuroma

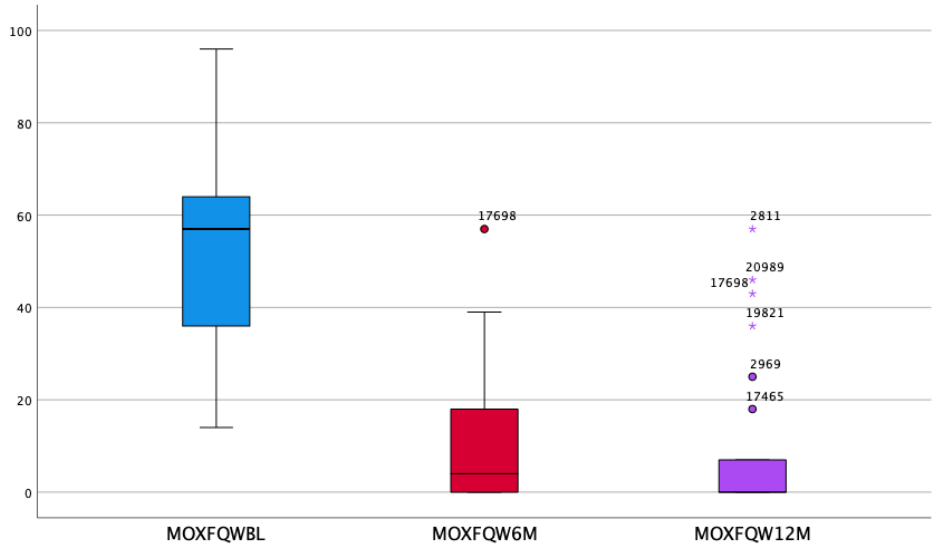


Figure 7.2 - MOXFQ Walking at base line, 6 months and 12 months for Morton's Neuroma

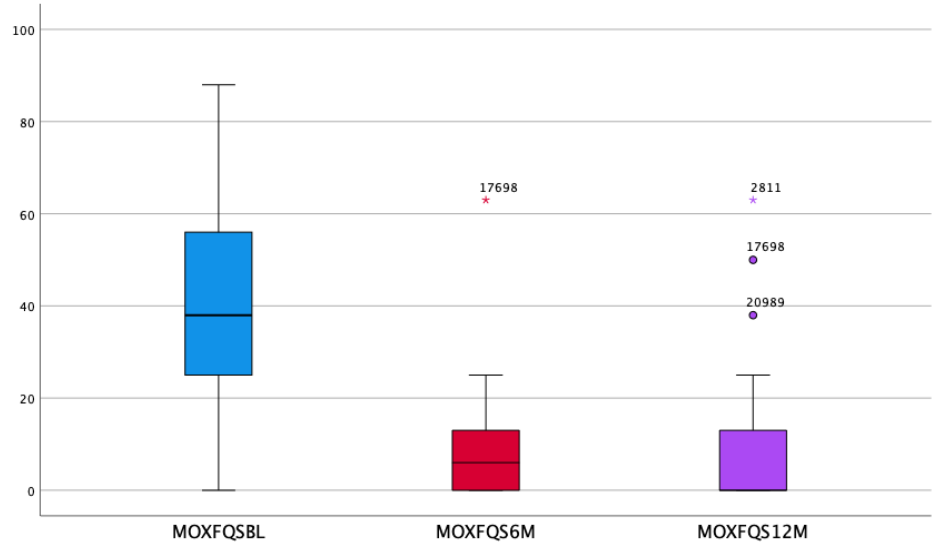


Figure 7.3 - MOXFQ Social at base line, 6 months and 12 months for Morton's Neuroma

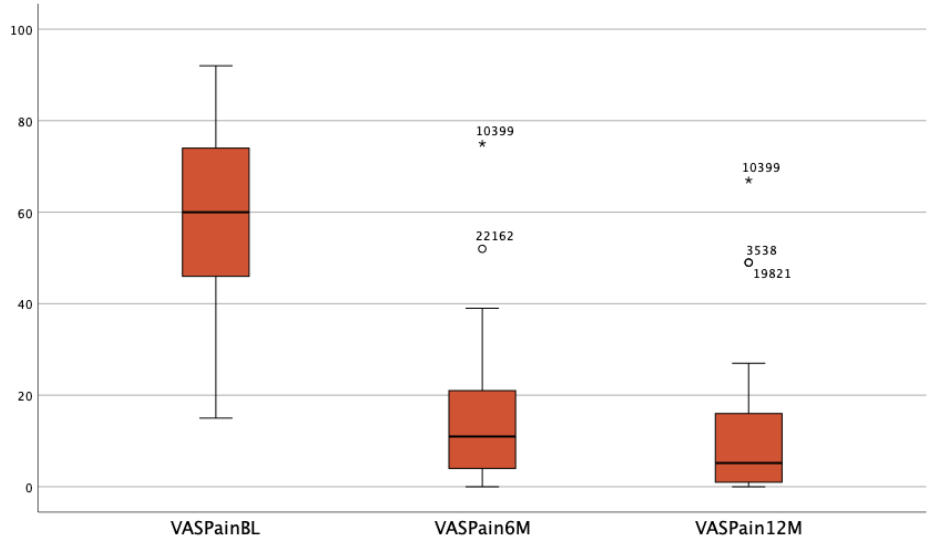


Figure 7.4 - VAS Pain at base line, 6 months and 12 months for Morton's Neuroma

Section 8: Double and Triple Arthrodesis

A total of 121 pathways were entered into the registry for double or triple arthrodesis. Of these 63.6% (n=77) were female. Mean age was 65.68 and mean BMI 34.28.

Surgical approach was recorded in 120/121 (99.17%) of pathways. Of these, 93.33 % (112/121) were Open with the remaining 6.67% (8/121) being performed arthroscopically or via a combined arthroscopic/open approach.

Baseline MOXFQ data was available in 56/121 cases: 48/121 had MOXFQ scores available for 6 months post op and 38/121 for 12 months post-op. There was a statistically significant improvement in scores across all three MOXFQ domains at 6 months post intervention. This exceeded the MIC for all three domains (Table 8.1). These clinically significant improvements were achieved in both double and triple arthrodesis subgroups (Figures 8.1-8.3). However, the triple fusion patients, had slower recovery across the PROMs.

		MOXFQ Double and Triple Arthrodesis								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		56	48	39	56	48	39	53	48	38
Mean		67.68	41.56	37.33	81.88	53.83	53.83	66.7	38.73	32.16
95% Confidence Interval for Mean	Lower Bound	62.27	34.06	28.32	76.6	44.78	44.78	59.42	30.19	22.55
	Upper Bound	73.09	49.06	46.35	87.15	62.88	62.88	73.98	47.27	41.76
Median		70	40	35	89	55.5	55.5	69	34.5	25
Std. Deviation		20.20	25.8	27.82	19.70	31.17	31.17	26.40	29.40	29.22

		VAS Pain for Double and Triple Arthrodesis		
		Base line	6 Month	12 Month
Number		67	52	45
Mean		62.96	37.28	32.02
95% Confidence Interval	Lower Bound	57.22	30.17	24
	Upper Bound	68.71	44.39	40.04
Median		70	35.5	25
Std. Deviation		23.57	25.53	26.70

Table 8.1 and 8.2 - PROMS scores for Double and Triple Arthrodesis combines

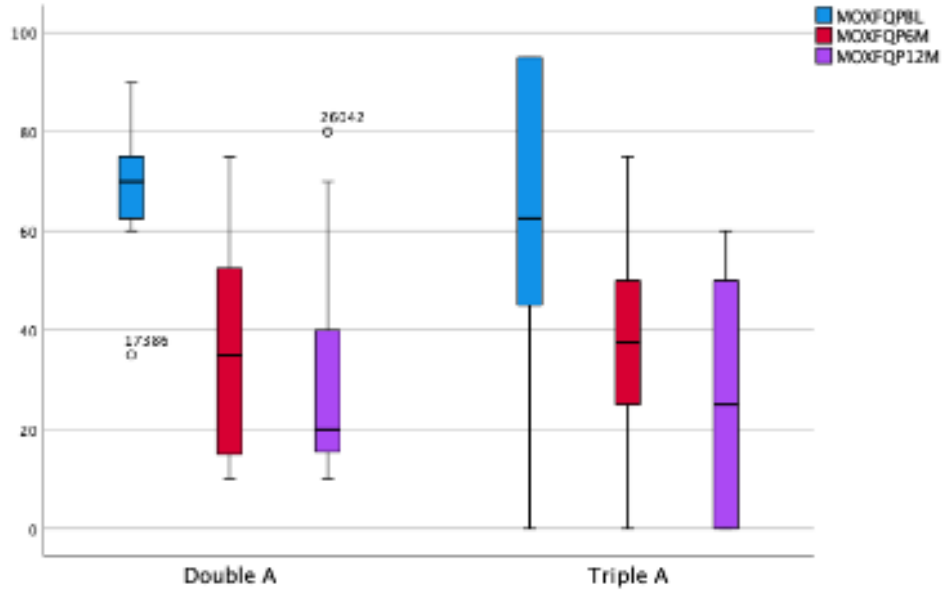


Figure 8.1 - MOXFQ Pain at base line, 6 months and 12 months for Double and Triple Arthrodesis

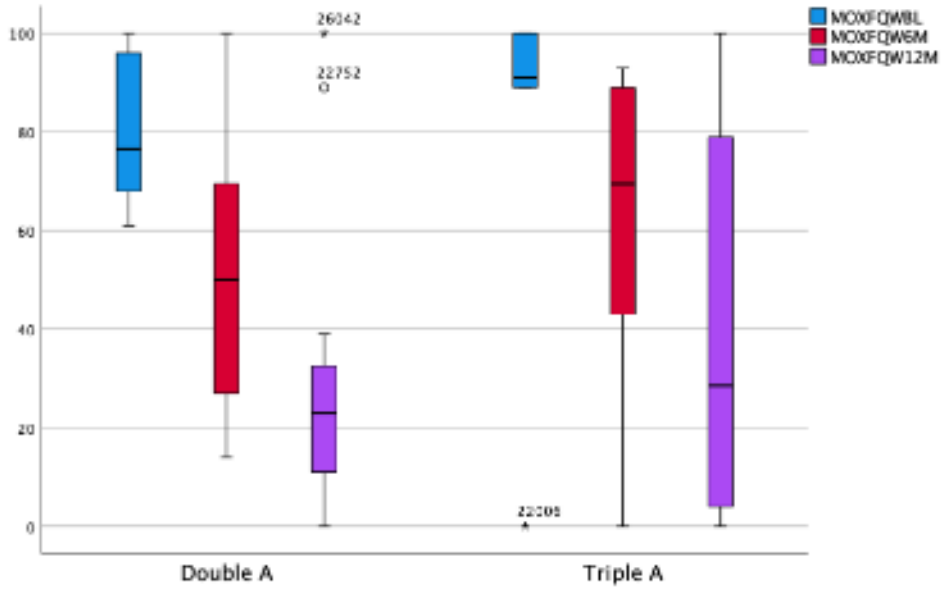


Figure 8.2 - MOXFQ Walking at base line, 6 months and 12 months for Double and Triple Arthrodesis

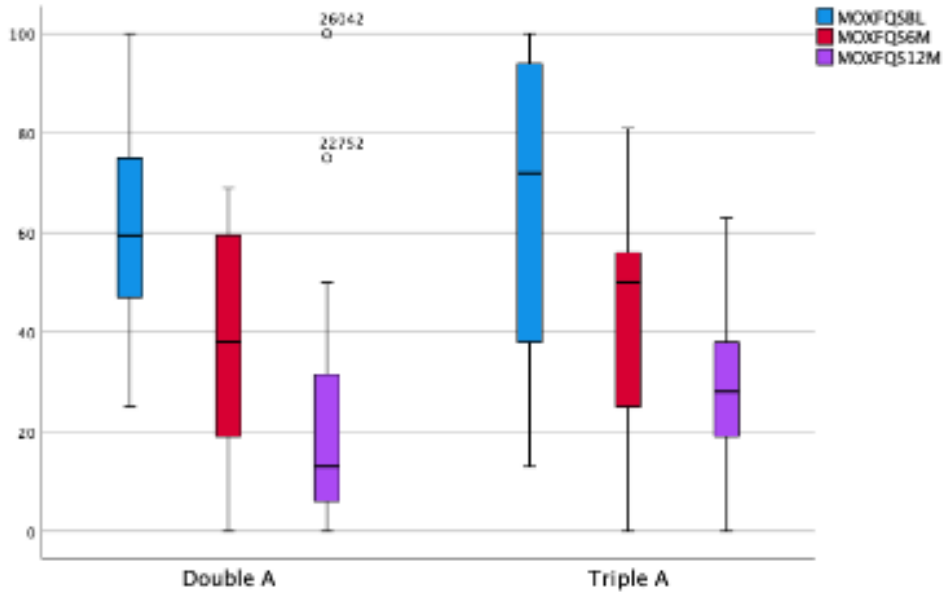


Figure 8.3 - MOXFQ Social at base line, 6 months and 12 months for Double and Triple Arthrodesis

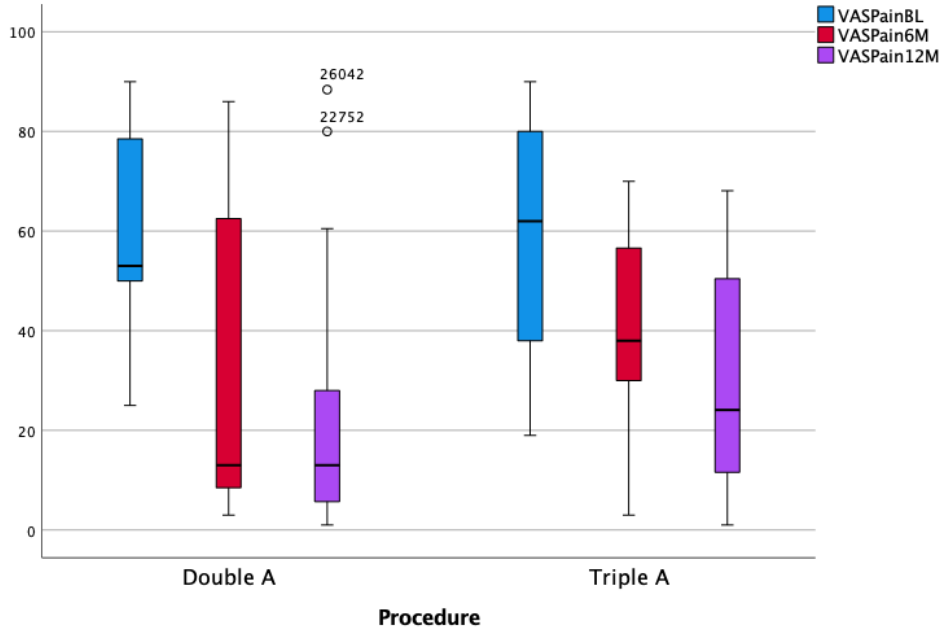


Figure 8.4 - VAS Pain at base line, 6 months and 12 months for Double and Triple Arthrodesis

Section 9: Ankle Ligament Reconstruction

There are 129 completed pathways for patients with ankle instability, of which 71 were for male patients. Of these 97 were arthroscopic and 32 open procedures.

Baseline MOXFQ was available in 110 cases, 48 at 6 months post-operatively and 38 at 12 months (Table 9.1). The MOXFQ Pain domain improved from a mean of 52.45 to 34.38 at 6 months and 23.29 at 12 months. The MOXFQ Walking domain improved from a mean of 55.3 at baseline to 32.17 at 6 months and 21.42 at 12 months. The MOXFQ Social domain improved from 47.12 at baseline to 28.46 at 6 months and 17.05 at 12 months.

The VAS pain score improved a mean of 41.89 at baseline in 112 patients to 28.02 in 49 patients at 6months and 20.15 in 41 patients at 12 months (Table 9.2). There were no significant differences between arthroscopic and open surgery.

		MOXFQ Ankle Ligament Reconstruction								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		110	48	38	110	48	38	110	48	38
Mean		52.45	34.38	23.29	55.3	32.17	21.42	47.12	28.46	17.05
95% Confidence Interval	Lower Bound	48.86	26.59	15.41	50.2	23.78	13.04	42.51	20.18	10.05
	Upper Bound	56.05	42.16	31.17	60.4	40.55	29.81	51.73	36.74	24.05
Median		55	32.5	17.5	54	27	11	44	19	13
Std. Deviation		19.033	26.81	23.973	27.004	28.88	25.507	24.405	28.519	21.293

		VAS Pain Ankle Ligament		
		Base line	6 Month	12 Month
Number		112	49	41
Mean		41.89	28.02	20.15
95% Confidence Interval	Lower Bound	37.35	20.53	11.96
	Upper Bound	46.43	35.5	28.34
Median		43.75	15	10
Std. Deviation		24.24	26.055	25.949

Table 9.1 and 9.2 - PROMS scores for Ankle Ligament Reconstruction

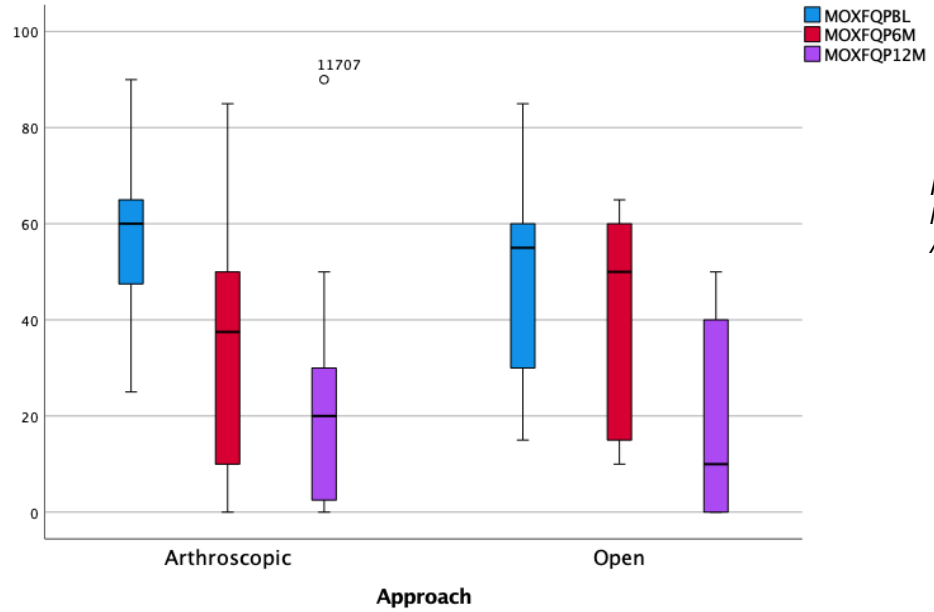


Figure 9.1 - MOXFQ Pain at base line, 6 months and 12 months for Ankle Ligament Reconstruction

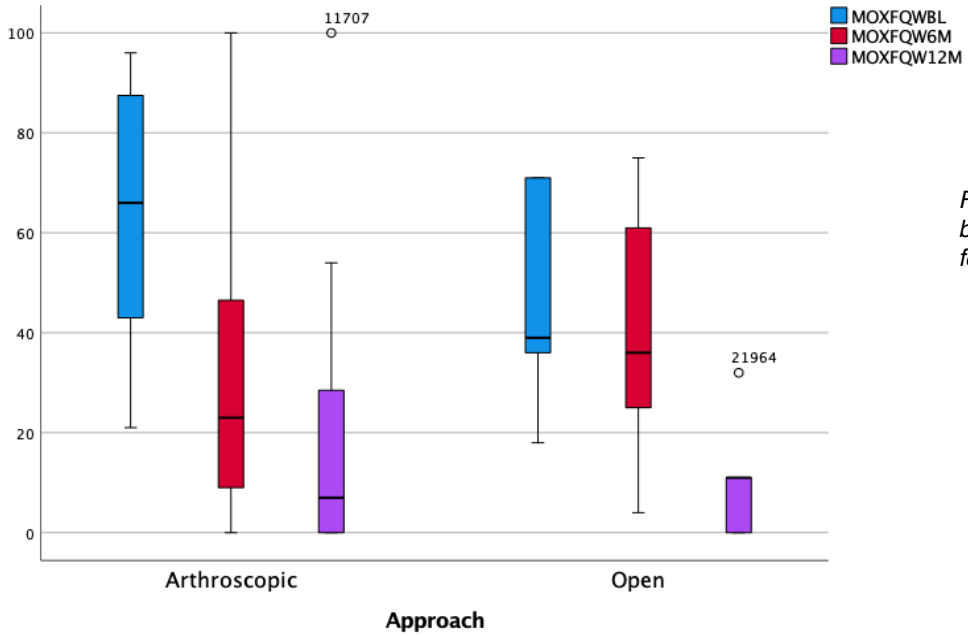


Figure 9.2 - MOXFQ Walking at base line, 6 months and 12 months for Ankle Ligament Reconstruction

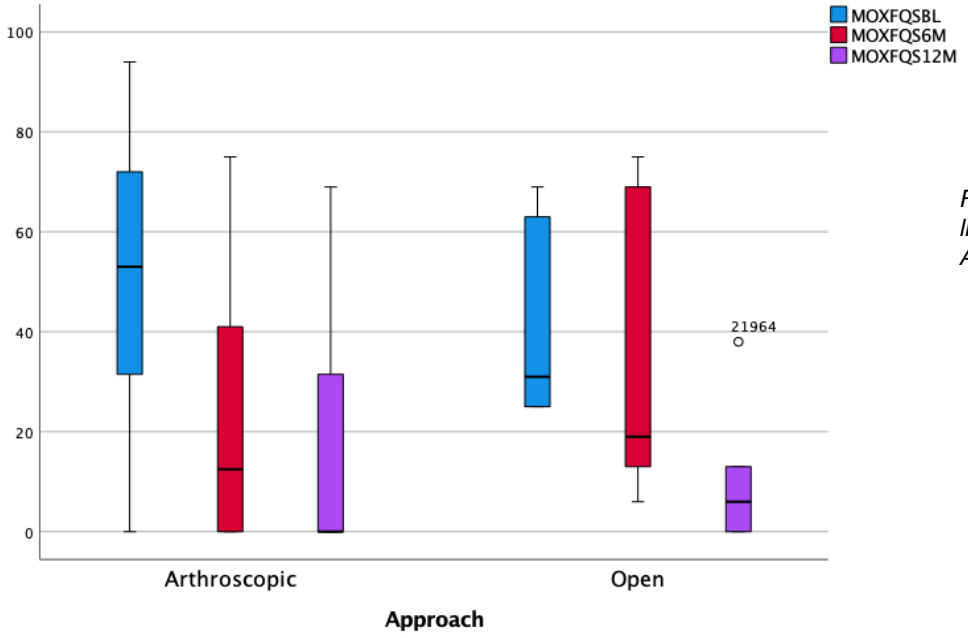


Figure 9.3 - MOXFQ Social at base line, 6 months and 12 months for Ankle Ligament Reconstruction

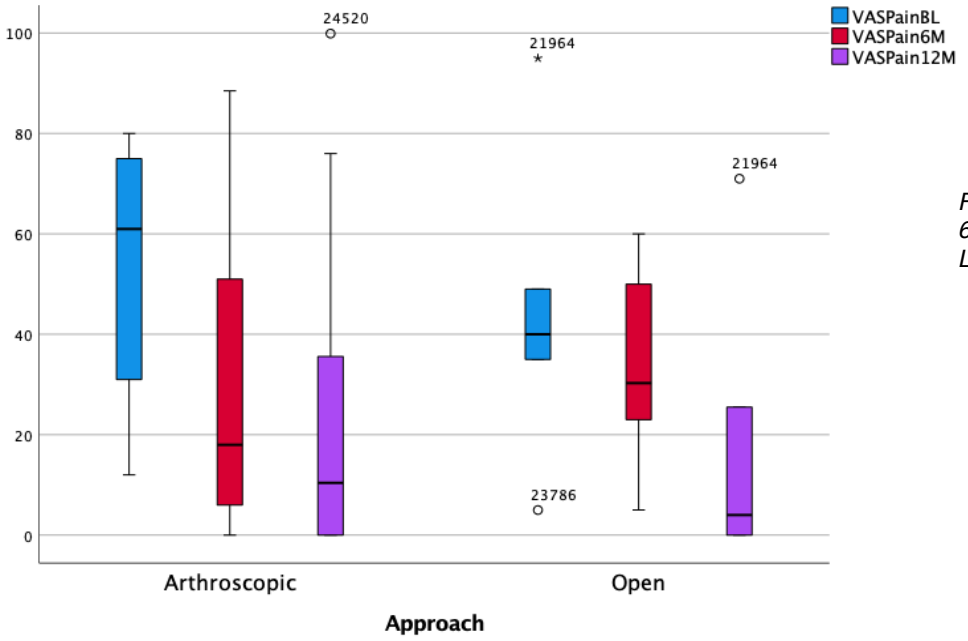


Figure 9.4 - VAS Pain at base line, 6 months and 12 months for Ankle Ligament Reconstruction

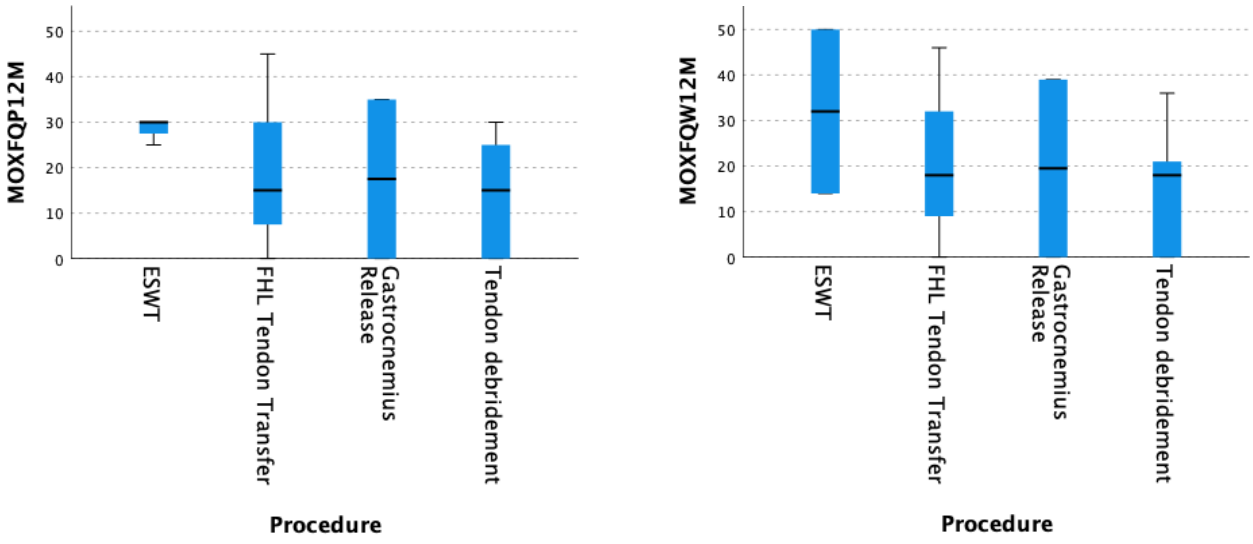
Section 10: Achilles Tendinopathy

The pathway allows PROMS collection for non-operative & operative management of Achilles tendinopathy, both insertional and non-insertional. The standard PROMS are EQ-5D and VISA-A, recorded at 6 months, 1 year and 2 years for operative procedures and non-operative interventions at 6 and 12 weeks.

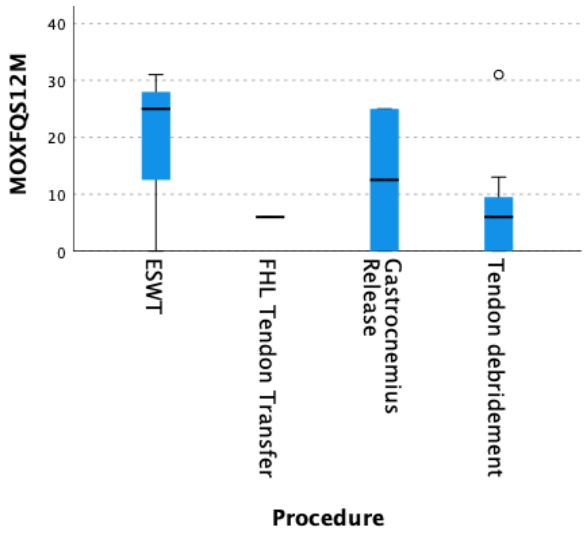
In total 354 Achilles tendinopathy pathways were recorded, 238 insertional and 116 non-insertional. Non-operative management with extracorporeal shockwave therapy was recorded in 181 pathways: 111 pathways for insertional and 70 pathways for non-insertional. Operative management was recorded in 134 pathways: 101 pathways for insertional and 33 pathways for non-insertional. The operative pathways included 28 Haglund's excisions, 5 FHL tendon transfers, 15 gastrocnemius releases, 71 Achilles tendon debridement and 15 Zadek's osteotomies. The remaining 39 Achilles tendinopathy pathways were not categorised. Data analysis has not been possible to small number of patients completing follow up questionnaires.

	Procedure							Total
	ESWT	Excision Haglunds	FHL Tendon Transfer	Gastrocnemius Release	Tendo Achilles Insertional Debridement Reattachment	Tendon debridement	Zadeks	
Achilles Tendinopathy (Insertional)	111	28	1	8	43	6	15	212
Achilles Tendinopathy (Non-Insertional)	70	0	4	7	1	21	0	103
	181	28	5	15	44	27	15	315

Table 10.1: Achilles Tendinopathy, number by treatment



Figures10.1 and 10.2: MOXFQ Pain (12M) & Walking (12M) Achilles Tendinopathy



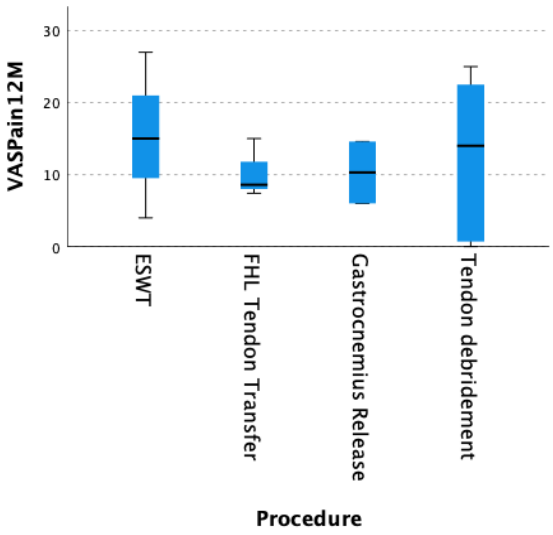


Figure s 10.3 and 10.4: MOXFQ Social (12M) and VAS Pain (12M) Achilles Tendinopathy

Section 11: Contralateral Leg Manchester Oxford Foot and Ankle Questionnaire

On the foot and ankle general pathway, patients can input MOXFQ scores for the contralateral limb. This is referred to as "the good leg", however there is no documenting of patients who have bilateral foot and ankle pathology or other reasons for pain in the limb not undergoing surgery.

Nevertheless, we are able to use this data to assess function in the contralateral limb following surgery. In general, the MOXFQ for pain, walking and social are near normal on the registry. Social scores are worse than pain and walking, which may be more indicative of the operated limb affecting this score more than the others.

There was no significant difference between base line scores or 12 months, throughout all domains. There was also no significant difference between age groups.

		Contralateral Leg								
		Pain			Walking			Social		
		Base line	6 Month	12 Month	Base line	6 Month	12 Month	Base line	6 Month	12 Month
Number		6676	3509	1744	6677	3509	1746	6566	3464	1755
Mean		11.93	10.65	10.32	12.43	11.04	10.55	18.75	15.26	13.77
95% Confidence Interval for Mean	Lower Bound	11.46	10.04	9.47	11.9	10.37	9.61	18.26	14.64	12.9
	Upper Bound	12.40	11.25	11.16	12.96	11.71	11.5	19.23	15.89	14.65
Median		0	0	0	0	0	0	13	13	6
Std. Deviation		19.54	18.261	17.958	22.121	20.348	20.109	19.87	18.76	18.47

Age	MOXFQP12M	MOXFQW12M	MOXFQS12M
<20	7.14	7.93	10.36
20-39	7.96	6.84	10.9
40-59	10.94	11.14	14.89
60-79	10.69	11.03	13.63
>80	5.65	9.11	11.33

Tables 11.1 & 11.2: Contralateral leg PROMS

Clinical Practice Committee Chair - Lyndon Mason

"Since the last registry report here has been development in the national implant registry. However, the continued use of the BOFAS registry is very pleasing as it continues to accumulate cases at an exponential rate. With NICE recommending that all MIS hallux valgus surgery and 1st MTPJ synthetic implants be placed on the BOFAS registry or equivalent, the importance of the registry grows. Compliance remains an issue, which is not unexpected considering the voluntary nature of the registry. Hopefully this report will be useful for foot and ankle surgeons in their day-to-day practice."

Summary

The BOFAS Registry continues to progress well, and data sets are maturing. Over the last few years there has been an increase in the total number of pathways and patients added. Nevertheless, only a minority of BOFAS members are actively entering data and the registered pathways are only a small proportion of national surgeries performed.

Compliance has improved from previous years, currently averaging 60% across all pathways. The Registry uses additional text message data collection, which has improved the PROMs, collection by approximately 10-15%. The general data has supported the success of the procedures in all PROMS, even with the very variable nature of the procedures that have been performed. Unlike arthroplasty surgery, where techniques can be relatively standardised, foot and ankle surgery encompass many diverse procedures, and standardisation is difficult to achieve.

The Registry has also been incorporated into national guidelines. The National Institute for Health and Care Excellence (NICE) have published two separate guidelines (published in June 2022 and 2024) stating Consultants performing 1st MTPJ Arthroplasty procedures and percutaneous or minimally invasive Hallux Valgus surgery must add their patients to the BOFAS Registry (or equivalent), to ensure clinical scores are collected and to facilitate the local review of clinical outcomes. It is believed that once patients have been added to the BOFAS Registry, Consultants will be able to discuss the outcomes of the procedure during their annual appraisal to reflect, learn and improve. This means that any Consultants who perform 1st MTPJ Arthroplasty procedures and / or percutaneous or minimally invasive Hallux Valgus surgery, whether that is within the NHS or private healthcare sector, will need to adopt BOFAS data entry as part of their normal routine. In the future, it is likely that more foot and ankle procedures will be mandated to collect PROMs through the BOFAS Registry.

The new pathways which incorporate trauma, including the adult ankle fracture pathway, are as yet too immature to report on. We expect in the coming years to be able to include trauma pathways and revision ankle arthroplasty onto the annual report.

With the government publishing their response to the Cumberlege report in 2021, accepting the recommendation 7, legislation through the Medicine and Dental Devices Act 2021, has given power to the secretary of state to regulate for the establishment of a UK-wide Medial Device Information System (MDIS). Central to the development of the MDIS are PROMS. The BOFAS Registry is showing the utility in data collection across multiple procedures, and it's continued use will only see it grow and become more useful.

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