The presentation, diagnosis and management of non-traumatic wrist pain: an evaluation of current practice in secondary care in the UK NHS

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Abstract

Objectives

The study aims were to assess the burden of non-traumatic wrist pain in terms of numbers of referrals to secondary care, and to characterise how patients present, are diagnosed and are managed in secondary care in the United Kingdom National Health Service.

Methods

Ten consecutive patients presenting with non-traumatic wrist pain were identified retrospectively at each of 16 participating hospitals and data was extracted for twelve months following the initial referral.

Results

The 160 patients consisted of 100 females and 60 males with a median age of 49, accounting for approximately 13% of all new hand/wrist referrals. The dominant wrist was affected in 60% of cases and the mean symptom duration was 13.3 months. Diagnoses were grouped into: osteoarthritis (OA) (31%), tendinopathy (13%), ganglion (14%), ulnar sided pain (17%) and other (25%). The OA group was significantly older than other groups, while other groups contained a predominance of females.

The non-surgical interventions in decreasing frequency of usage were: steroid injections (39%), physiotherapy (32%), splint (31%) and analgesics (12%). Of those who underwent surgery, all patients had previously received non-surgical treatment, however 42% had undergone only one non-surgical intervention.

Conclusions

Non-traumatic wrist pain represents a significant burden to secondary care both in terms of new patient referrals and in terms of investigation, follow up and treatment. Those presenting with osteoarthritis are more likely to be older and male, while those presenting with other diagnoses are more likely to be younger and female.

Key words: wrist; pain; osteoarthritis; surgery; NHS

Key messages

- Non-traumatic wrist pain represents a significant burden to secondary care in the UK
- The most common diagnostic group was osteoarthritis of the wrist
- The most widely used non-surgical intervention was the steroid injection

Introduction

Wrist pain is a common problem accounting for an annual consultation prevalence rate of 58 in 10,000 patients in primary care in the UK[1]; around one tenth of the consultation rate for back pain, the most common site of musculoskeletal pain. The prevalence of non-specific hand and wrist pain is approximately 10% in the general population[2], higher than the combined total prevalence of de Quervain's tenosynovitis, wrist tenosynovitis and carpal tunnel syndrome reported at approximately 3%. Wrist pain is more prevalent in those who work in more physically demanding occupations and in sportspeople[3].

The variable structure of local health care systems within the National Health Service (NHS) in the United Kingdom (UK), means pathways for non-traumatic wrist pain are likely to be heterogenous[4]. Generally, referrals pass from primary care, through an interface musculoskeletal service for initial diagnostics and treatment, with secondary care referrals emerging as necessary. Relatively little has been published regarding the presentation, diagnosis and management of non-traumatic wrist pain in both interface and secondary care services.

In this context, the specific aims of this study were to:

1. Assess the overall proportion of referrals for non-traumatic wrist pain received by specialist hand and wrist clinics in the UK.
2. Describe the demographics and diagnoses in these patients.
3. Describe the investigations and interventions performed.

Methods

Ten consecutive patients presenting with non-traumatic wrist pain were identified from specialist hand and wrist clinics in sixteen UK hospitals. Data collection was performed collaboratively utilising orthopaedic higher surgical trainees and consultants (invited via the British Orthopaedic Network Environment) and informal, regional consultant networks. No hospitals were excluded. Data gathering was approved via each participating hospital's audit department.

Patients were retrospectively identified by reviewing all new patient referrals from 1st January 2017 onwards. Patients with a clear history or radiological evidence of substantial trauma were excluded (i.e. scaphoid fracture or non-union/distal radius fracture or mal-union/fracture clinic patients) as were patients with previous wrist surgery to the affected side, diagnosis of inflammatory arthritis, a suspected diagnosis of carpal tunnel syndrome, thumb base degeneration, or referred by another hand/wrist specialist for a second/third opinion. Figure 1 summarises the patient selection process.

The first ten patients presenting with non-traumatic wrist pain were reviewed in detail from first appointment through to discharge or to twelve months following initial appointment, whichever occurred first. The total number of new patient referrals required to obtain 10 non-traumatic wrist pains was recorded. Data was collected using a standardised form, including age, gender, hand dominance, employment status, date of first appointment, site of wrist pain, duration of symptoms, investigations undertaken, non-surgical interventions undertaken, final stated diagnosis, date and type of surgery, complications, the number of appointments over the year period and whether the patient had been discharged by the end of this year. If diagnostic uncertainty remained at the end of

follow-up, then this was recorded as 'unknown'. The data related to the clinical documentation only. Thus if 'analgesia use' had not specifically been documented, then for the purposes of this study it did not occur.

Five broad diagnostic categories were generated by consensus involving the senior surgeons within the group (NR and RWT) prior to data analysis: osteoarthritis – including radiocarpal, midcarpal, or distal radioulnar joint (DRUJ), tendinopathy, ulnar sided pain – including ulnocarpal abutment, triangular fibrocartilage (TFCC), and extensor carpi ulnaris (ECU) pathology, ganglion and other (non-traumatic instability, avascular necrosis, non-specific, and unknown).

Statistics

Statistical analysis was carried out using GraphPad Prism version 5.00 for Windows (GraphPad Software, San Diego California USA, www.graphpad.com) and with STATA/IC 16 (StataCorp LP, College Station, TX, USA) . Histograms for all data sets were analysed to assess for normality. Data was normally distributed unless otherwise stated. Results are expressed as mean ± standard deviation (SD) unless otherwise stated. Unpaired t-tests and Mann Whitney U-tests were used to test for differences between two groups for parametric and non-parametric data respectively. The Kruskal Wallis one-way analysis of variance was used to test for differences within multiple groups of non-parametric data and ANOVA was used to test multiple groups of parametric data. Fisher's exact test was used to test for differences between two categorical variables. Statistical significance was set at a level of $p<0.05$.

Results

Centres, referral patterns and burden

The details relating to the sixteen participating centres are represented in Table 1. The mean proportion of hand and wrist clinic referrals which related to non-traumatic wrist pain was 12.9% over a mean 106-day review period. Using this proportion, correcting for the observed 106-day review period, and assuming a UK population of 66 million, there are approximately 4,228 new patient referrals to secondary care for non-traumatic wrist pain per annum in the UK (Figure 1).

Patient demographics and characteristics

There were 100 females and 60 males with a median age of 49 (IQR 34 to 60). The dominant wrist was affected in 60% of cases and the mean symptom duration was 13.3 months. Osteoarthritis of the radiocarpal or midcarpal joints was the most common diagnosis within the nine categories considered (Table 2). A further breakdown of the diagnoses within each diagnostic group is detailed in Appendix 1.

Patients with a diagnosis of OA were significantly older (median age 64) than other groups (median ages between 41 and 44 and contained a statistically significant predominance of males (69%, $p<0.001$) (Table 3). There was a similar proportion of dominant (49%) and non-dominant (45%) wrists affected. In comparison, the other diagnostic groups were predominantly female (between 67% and 91%) with the dominant wrist affected (between 57% and 73%; $p=0.09$).

Table 1 – Details relating to the sixteen centres and their referral patterns

Centre number	Approximate population (k)	Referrals screened	% wrist pain	Time for 10 referrals (days)
1	350	102	9.8%	31
2	500	100	10%	98
3	590	161	6.2%	124
4	500	65	15.3%	140
5	800	68	14.7%	58
6	360	200	5%	129
7	850	69	14.4%	114
8	350	38	26.3%	15
9	1000	106	9.4%	90
10	550	103	9.7%	115
11	300	361	2.8%	330
12	650	61	16.4%	19
13	350	291	34.4%	171
14	350	68	14.7%	46
15	600	85	11.8%	100
16	500	171	5.8%	121
Overall (mean unless otherwise stated)	538 8600 total	125 1878 total	12.9%	106

Table 2 – Breakdown of patient demographics and characteristics based on gender

Factor	Level	All	Male	female	p-value (between male and female)
N		160	60	100	
Age, median (IQR)		49.0 (34.0, 60.0)	54.5 (34.0, 68.5)	47.5 (33.0, 54.0)	0.035*
Wrist affected	dominant	96 (60.0%)	33 (55.0%)	63 (63.0%)	0.47
	non dominant	52 (32.5%)	23 (38.3%)	29 (29.0%)	
	both	12 (7.5%)	4 (6.7%)	8 (8.0%)	
Diagnosis	OA	49 (30.6%)	34 (56.7%)	15 (15%)	<0.001***
	Ulnar group	28 (17.5%)	7 (11.7%)	21 (21.0%)	
	tendinopathy	21 (13.1%)	4 (6.7%)	17 (17.0%)	
	ganglion	22 (13.8%)	2 (3.3%)	20 (20.0%)	
	other	40 (25%)	13 (21.7%)	27 (27%)	
Symptom duration, mean (SD)		13.3 (11.3)	14.4 (12.4)	12.6 (10.6)	0.33
Site of wrist pain	ulnar	46 (28.7%)	19 (31.7%)	27 (27.0%)	0.50
	radial	47 (29.4%)	18 (30.0%)	29 (29.0%)	
	central	39 (24.4%)	16 (26.7%)	23 (23.0%)	
	diffuse	28 (17.5%)	7 (11.7%)	21 (21.0%)	
Employment	unemployed	12 (7.5%)	1 (1.7%)	11 (11.0%)	0.032*
	employed	92 (57.5%)	39 (65.0%)	53 (53.0%)	
	retired	27 (16.9%)	13 (21.7%)	14 (14.0%)	
	unknown	29 (18.1%)	7 (11.7%)	22 (22.0%)	

Table 3 – Breakdown of patient demographics and characteristics based on the five diagnostic groups

Factor	Level	OA	tendinopathy	ganglion	Ulnar group	other	p-value
N		49 (31%)	21 (13%)	22 (14%)	28 (17%)	40 (25%)	
Age, median (IQR)		64.0 (53.0, 73.0)	44.0 (37.0, 54.0)	41.0 (27.0, 53.0)	44.0 (32.0, 51.0)	44.0 (30.0,52.0)	<0.001***
Sex	male	34 (69%)	4 (19%)	2 (9%)	7 (25%)	13 (33%)	<0.001***
	female	15 (31%)	17 (81%)	20 (91%)	21 (75%)	27 (68%)	
Wrist affected	dominant	24 (49%)	13 (62%)	16 (73%)	16 (57%)	27 (68%)	0.089
	non dominant	22 (45%)	4 (19%)	6 (27%)	11 (39%)	9 (23%)	
	both	3 (6%)	4 (19%)	0 (0%)	1 (4%)	4 (10%)	
Symptom duration, mean (SD)		13.8 (10.9)	11.5 (10.3)	11.4 (7.1)	15.6 (12.5)	13.1 (13.3)	0.66
Site	ulnar	12 (24%)	0 (0%)	2 (9%)	23 (82%)	9 (23%)	<0.001***
	radial	18 (37%)	18 (86%)	3 (14%)	1 (4%)	7 (18%)	
	central	10 (20%)	3 (14%)	10 (45%)	1 (4%)	15 (38%)	
	diffuse	9 (18%)	0 (0%)	7 (32%)	3 (11%)	9 (23%)	
Employed	unemployed	5 (10%)	1 (5%)	2 (9%)	1 (4%)	3 (8%)	0.012*
	employed	21 (43%)	11 (52%)	11 (50%)	21 (75%)	28 (70%)	
	retired	17 (35%)	2 (10%)	3 (14%)	3 (11%)	2 (5%)	
	unknown	6 (12%)	7 (33%)	6 (27%)	3 (11%)	7 (18%)	
Instability	no	45 (92%)	21 (100%)	22 (100%)	27 (96%)	33 (83%)	0.11
	yes	4 (8%)	0 (0%)	0 (0%)	1 (4%)	7 (18%)	

Investigations and clinical follow-up

There were statistically significant differences between diagnostic groups and investigations obtained (Table 4). Plain radiographs were the most commonly obtained investigation overall (89%) and used most frequently where an eventual diagnosis of OA was made (98%). MRI was frequently used for patients with ulnar sided (82%) and other pathology (60%) groups. Ultrasound was used in 21% overall, with it being used most frequently in tendinopathy (57%) and ganglia (32%). Use of MRI but not ultrasound was associated with a significant likelihood of being discharged within the year (p=0.003). Not having an x-ray was positively associated with being discharged (p=0.0001). Neither of those diagnostic modalities was associated with a decreased need for surgery p=0.3). Nerve conduction studies were used infrequently (8% overall). The median number of appointments within the twelve-month period was two, with most patients having two or more appointments within the year (84%). Having more than two appointments was significantly associated with risk of having surgery (p=0.0001;). The proportion discharged by the end of the twelve-month period was significantly different between diagnostic groups with the group most likely to be discharged being tendinopathy (76%) and the least likely patients with ulnar sided pain (32%).

Non-surgical interventions

Non-surgical interventions included steroid injections (39%), physiotherapy (32%), splint (31%) and analgesics (12%) (Table 4). Splints were variably used between diagnostic groups and most frequently in OA (49%). Physiotherapy was used differently between diagnostic groups (p=0.01) and most frequently in the other group (49%). 43% of patients were treated with 2 or more non-surgical interventions. Of the 51 patients receiving physiotherapy the most common regime was

strengthening (14 patients) and unspecified (14 patients), the other regimes were: activity modification (9 patients), range of motion exercises (5 patients), , strengthening and activity modification (3 patients), splint and activity modification (2 patients), splint and range of motion exercise (2 patients), splint/activity modification/strengthening (1 patient) and manual therapy/activity modification/range of motion exercises (1 patient).

Table 4 – Details of investigations and non-surgical interventions undertaken

Factor	Level	Overall	OA	tendinopathy	ganglion	Ulnar group	other	p-value
N		160	49	21	22	28	40	
Investigations								
Xray	no	17 (11%)	1 (2%)	8 (38%)	6 (27%)	2 (7%)	3 (8%)	<0.001***
	yes	143 (89%)	48 (98%)	13 (62%)	16 (73%)	26 (93%)	37 (93%)	
Ultrasound	no	126 (79%)	47 (96%)	9 (43%)	15 (68%)	24 (86%)	31 (79%)	<0.001***
	yes	34 (21%)	2 (4%)	12 (57%)	7 (32%)	4 (14%)	9 (22%)	
Nerve Conduction Study	no	147 (92%)	49 (100%)	21 (100%)	19 (86%)	27 (96%)	31 (78%)	<0.001***
	yes	13 (8%)	0 (0%)	0 (0%)	3 (14%)	1 (4%)	9 (23%)	
MRI	no	89 (56%)	33 (67%)	19 (90%)	16 (73%)	5 (18%)	16 (40%)	<0.001***
	yes	71 (44%)	16 (33%)	2 (10%)	6 (27%)	23 (82%)	24 (60%)	
Non-surgical								
Analgesia	no	140 (88%)	39 (80%)	18 (86%)	21 (95%)	25 (89%)	37 (93%)	0.27
	yes	20 (12%)	10 (20%)	3 (14%)	1 (5%)	3 (11%)	3 (8%)	
Physical Therapy	no	109 (68%)	32 (65%)	17 (81%)	21 (95%)	18 (64%)	21 (54%)	0.01*
	yes	51 (32%)	17 (35%)	4 (19%)	1 (5%)	10 (36%)	19 (46%)	
Splint	no	110 (69%)	25 (51%)	16 (76%)	20 (91%)	22 (79%)	27 (68%)	0.007**
	yes	50 (31%)	24 (49%)	5 (24%)	2 (9%)	6 (21%)	13 (33%)	
Injection	no	97 (61%)	25 (51%)	9 (43%)	15 (68%)	17 (61%)	31 (78%)	0.041*
	yes	63 (39%)	24 (49%)	12 (57%)	7 (32%)	11 (39%)	9 (23%)	
Any treatment	0	30 (23%)	3 (6%)	5 (24%)	6 (27%)	8 (29%)	8 (21%)	0.080
	1	130 (77%)	46 (94%)	16 (76%)	16 (73%)	20 (71%)	32 (79%)	
Number of non-surgical treatments	0	30 (19%)	3 (6%)	5 (24%)	6 (27%)	8 (29%)	8 (21%)	0.14
	1	52 (33%)	19 (39%)	9 (43%)	12 (55%)	7 (25%)	15 (38%)	

	2	46 (29%)	16 (33%)	3 (14%)	4 (18%)	9 (32%)	14 (36%)	
	3	14 (9%)	8 (16%)	3 (14%)	0 (0%)	2 (7%)	1 (3%)	
	4	7 (4%)	2 (4%)	1 (5%)	0 (0%)	2 (7%)	2 (5%)	
	5	1 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Number of Appointments	0	1 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.40
	1	34 (21%)	11 (22%)	5 (24%)	7 (32%)	2 (7%)	9 (23%)	
	2	65 (41%)	19 (39%)	12 (57%)	10 (45%)	11 (39%)	13 (33%)	
	3	39 (24%)	12 (24%)	3 (14%)	5 (23%)	10 (36%)	9 (23%)	
	4	20 (13%)	5 (10%)	1 (5%)	0 (0%)	5 (18%)	9 (23%)	
	5	1 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Discharged with the first 12 months	no	81 (51%)	28 (57%)	5 (24%)	9 (41%)	19 (68%)	20 (50%)	0.026*
	yes	79 (49%)	21 (43%)	16 (76%)	13 (59%)	9 (32%)	20 (50%)	

Surgery and risk factors for surgery

Overall 27% of patients underwent surgical intervention. In 17 of these 43 patients, a component of the primary surgery was diagnostic. The proportion of diagnostic surgery was significantly different between diagnostic groups (Table p=0.002), with diagnostic surgery being most frequent in the ulnar sided (20%) and other (25%) groups (Table 5).

Surgery was less likely in patients who had not received non-surgical treatments (p=0.002)(Table 6). There was no association between steroid injection and subsequent surgery. There were five complications of surgery (one infection, two failed bone grafting, one instability and one broken screw), of which three required secondary surgery (one failed bone graft converted to arthrodesis, one removal of broken screw and one thumb basal joint stabilisation following Brunelli procedure). The other two cases of secondary surgery consisted of arthrodesis following diagnostic arthroscopies.

Table 5 – Details of surgery undertaken within the different diagnostic groups

Factor	Level	Overall	OA	tendinopathy	ganglion	Ulnar group	other	p-value
N		43	13	4	9	9	8	
Surgery	no	117 (73%)	36 (73%)	17 (81%)	13 (59%)	19 (68%)	32 (80%)	0.38
	yes	43 (27%)	13 (27%)	4 (19%)	9 (41%)	9 (32%)	8 (20%)	
Diagnostic surgery	no	143 (89%)	47 (96%)	21 (100%)	22 (100%)	32 (80%)	21 (75%)	0.002
	yes	17 (11%)	2 (4%)	0 (0%)	0 (0%)	8 (20%)	7 (25%)	
Secondary surgery	no	38 (88%)	11 (85%)	4 (100%)	9 (100%)	7 (78%)	7 (88%)	0.19
	yes	5 (12%)	2 (15%)	0 (0%)	0 (0%)	2 (22%)	1 (12%)	
Complications	no	38	13 (100%)	4 (100%)	9 (100%)	5 (56%)	7 (88%)	0.056
	yes	5 (12%)	0 (0%)	0 (0%)	0 (0%)	4 (44%)	1 (12%)	
Type of primary surgery	Arthroscopy	9	3 (23%)	0 (0%)	0 (0%)	4 (44%)	2 (25%)	<0.001
	Arthrodesis	4	4 (31%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
	Arthroplasty inc. excision	4	4 (31%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
	Tendon decompression or debridement	5	0 (0%)	4 (100%)	0 (0%)	1 (11%)	0 (0%)	
	Ganglion excision	9	0 (0%)	0 (0%)	9 (100%)	0 (0%)	0 (0%)	
	Soft tissue reconstruction	4	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (50%)	
	Bone grafting	2	0 (0%)	0 (0%)	0 (0%)	1 (11%)	1 (13%)	
	Osteotomy ulnar	3	0 (0%)	0 (0%)	0 (0%)	3 (33%)	0 (0%)	
	Other	3	2 (15%)	0 (0%)	0 (0%)	0 (0%)	1 (13%)	
Type of secondary surgery	arthrodesis	3	1 (50%)			1 (50%)	1 (100%)	0.74
	other		1 (50%)			1 (50%)		

Table 6 – The relationship between surgery and investigations/interventions

Factor	Level	no	yes	p-value
Surgery		117	43	
Ultrasound	no	92 (80.0%)	33 (76.7%)	0.65
	yes	23 (20.0%)	10 (23.3%)	
MRI	no	66 (56.9%)	22 (51.2%)	0.52
	yes	50 (43.1%)	21 (48.8%)	
Xray	no	14 (12.0%)	6 (14.0%)	0.74
	yes	103 (88.0%)	37 (86.0%)	
Nerve Conduction Study	no	105 (89.7%)	42 (97.7%)	0.10
	yes	12 (10.3%)	1 (2.3%)	
Number of investigations, mean (SD)		1.6 (0.8)	1.6 (0.7)	0.80
Analgesia	no	103 (88.0%)	37 (86.0%)	0.74
	yes	14 (12.0%)	6 (14.0%)	
Therapy	no	78 (67.2%)	31 (72.1%)	0.56
	yes	38 (32.8%)	12 (27.9%)	
Injection	no	67 (57.3%)	30 (69.8%)	0.15
	yes	50 (42.7%)	13 (30.2%)	
Splint	no	77 (65.8%)	33 (76.7%)	0.19
	yes	40 (34.2%)	10 (23.3%)	
Number of no-surgical treatments	0	30 (25.9%)	0 (0.0%)	0.002**
	1	44 (37.9%)	18 (41.9%)	
	2	31 (26.7%)	15 (34.9%)	
	3	8 (6.9%)	5 (11.6%)	
	4	3 (2.6%)	4 (9.3%)	
	5	0 (0.0%)	1 (2.3%)	

Discussion

Like post-traumatic wrist pain [5 6], based the findings from this sample it appears that non-traumatic wrist pain represents a significant demand on secondary care services regarding new patient referrals and burden of investigations, follow up and treatment. These patients generate costs to the health service in terms of investigations (44% undergo an MRI scan), non-surgical treatments, clinic time and surgery (27% undergo some form of surgical intervention).

Perhaps unsurprisingly, those patients ultimately diagnosed with osteoarthritis were more likely to be older and male, while those having other non-osteoarthritic diagnoses were more likely to be younger and female. This is consistent with previous epidemiological research [7 8].

Many structural abnormalities have been demonstrated to be highly prevalent in asymptomatic patients such as those relating to the TFCC[9], extensor carpi ulnaris tendon[10] and ganglia[11 12]. Given the lack of real-world data relating to commonly presenting wrist pain conditions, our study findings detailing the main diagnostic groups are of interest (osteoarthritis (OA) (31%), tendinopathy (13%), ganglion (14%), ulnar including abutment/TFCC (18%) and other (25%)). Given the absence of high quality evidence relating to common wrist disorders, this points to the importance of generating high quality evidence in order to better guide practice in this area, particularly relating to wrist osteoarthritis[3]. Having an MRI scan, which was most often used for ulnar side pain, was associated with discharge within the first year.

Of those who underwent surgery, all patients had previously received non-surgical treatment, however 42% underwent only one non-surgical treatment, with the remainder being treated with two or more non-surgical therapies. This demonstrates that most patients are undergoing a reasonable course of non-surgical management before converting to a surgical option. It is notable that only 12% of patients were documented to have trialled analgesia and although this figure is likely to be a significant underestimate of the actual proportion of patients taking analgesics, in the context of the Montgomery ruling it is vital to adequately document non-surgical interventions such as analgesia, particularly in those undergoing surgical intervention[13].

There are limitations to this work. The methods of sampling used have resulted in potential biases, for example the sample of hospitals may not be fully representative of the United Kingdom and this may have had some influence on the results. The data has come from sources which rely on clear and complete documentation and is therefore exposed to potential inaccuracies. For the purpose of the analysis, we have grouped the diagnoses into broad categories and there will be debate that this categorisation could have been undertaken differently. Furthermore, given the lack of high quality studies investigating diagnostic accuracy around the wrist, it cannot be claimed that our decision to take the final stated diagnosis as accurate is free of limitations. However, we feel that this is a pragmatic decision, serving as a sensible starting point upon which further research can be based. Given the paucity of published real-world data relating to non-traumatic wrist pain, this study provides genuinely novel information with significant clinical meaning.

Conclusions

Non-traumatic wrist pain represents a significant burden to secondary care both in terms of new patient referrals and in terms of investigation, follow up and treatment. Those presenting with osteoarthritis are more likely to be older and male, while those presenting with other diagnoses are

more likely to be younger and female. Given the absence of high quality evidence relating to common wrist disorders, this study points to the importance of generating high quality evidence in order to better guide practice in this area, particularly relating to wrist osteoarthritis

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Contributions

All authors have made substantial contributions to all three of sections (1), (2) and (3) below:

(1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data

(2) drafting the article or revising it critically for important intellectual content

(3) final approval of the version to be submitted

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Competing interests

There are no competing interests

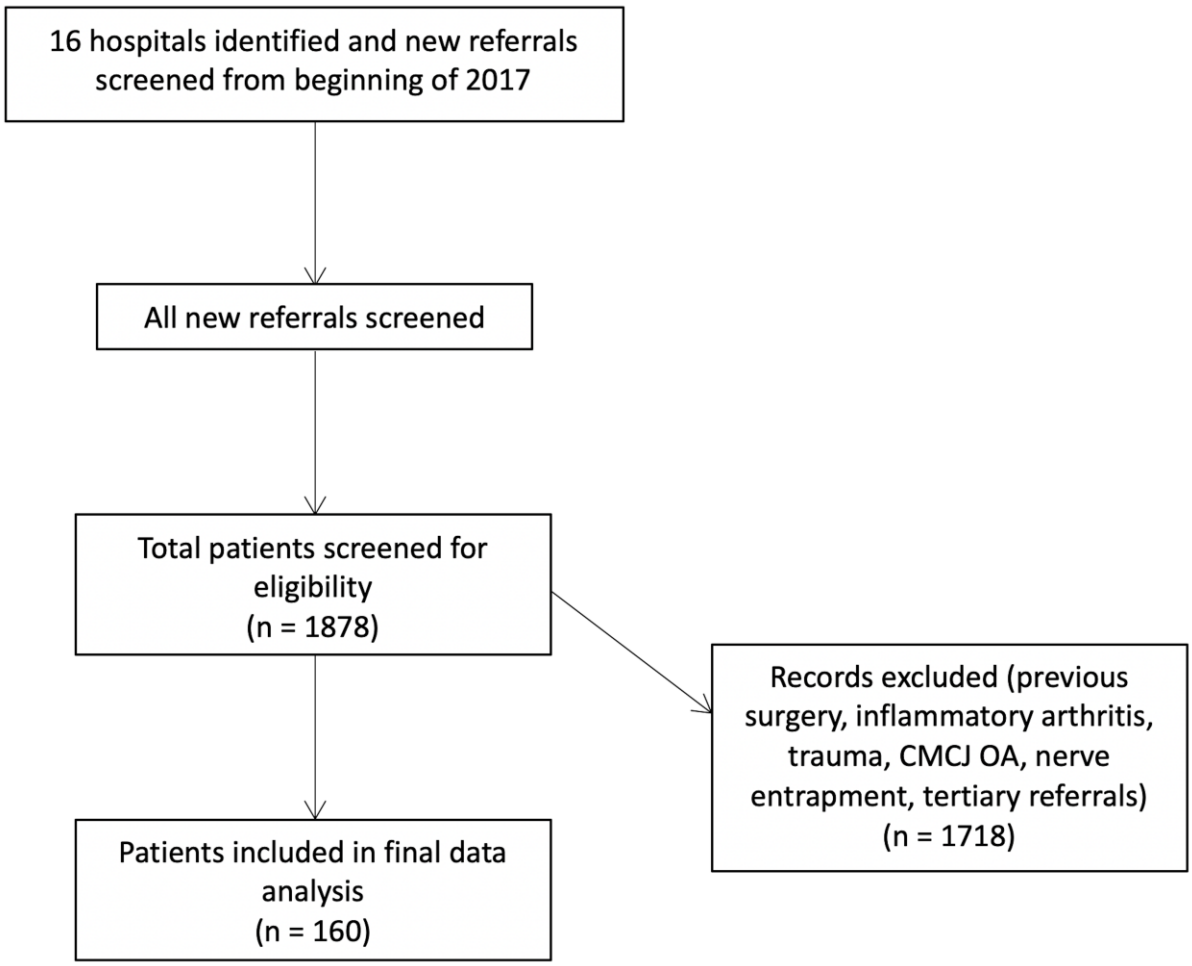

Figure 1 - Flow diagram demonstrating patient selection process