

Factors influencing patient decision-making to undergo shoulder arthroplasty

a qualitative interview study

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Aims

Shoulder arthroplasty is effective in the management of end-stage glenohumeral joint arthritis. However, it is major surgery and patients must balance multiple factors when considering the procedure. An understanding of patients' decision-making processes may facilitate greater support of those considering shoulder arthroplasty and inform the outcomes of future research.

Methods

Participants were recruited from waiting lists of three consultant upper limb surgeons across two NHS hospitals. Semi-structured interviews were conducted with 12 participants who were awaiting elective shoulder arthroplasty. Transcribed interviews were analyzed using a grounded theory approach. Systematic coding was performed; initial codes were categorized and further developed into summary narratives through a process of discussion and refinement. Data collection and analyses continued until thematic saturation was reached.

Results

Two overall categories emerged: the motivations to consider surgery, and the information participants used to inform their decision-making. Motivations were, broadly, the relief of pain and the opportunity to get on with life and regain independence. When participants' symptoms and restrictions prevented them enjoying life to a sufficient extent, this provided the motivation to proceed with surgery. Younger participants tended to focus on maintaining employment and recreational activities, and older patients were eager to make the most of their remaining lifetime. Participants gathered information from a range of sources and were keen to optimize their recovery where possible. An important factor for participants was whether they trusted their surgeon and were prepared to delegate responsibility for elements of their care.

Conclusion

Relief of pain and the opportunity to get on with life were the primary reasons to undergo shoulder arthroplasty. Participants highlighted the importance of the patient-surgeon relationship and the need for accurate information in an accessible format which is relevant to people of different ages and functional demands.

Take home message

- This study provides insight into how patients approach the decision to have a shoulder arthroplasty.
- Patients are keen to know how symptoms and function improve in people with similar demands to them, and to understand how to optimize their recovery.

- They highlight the importance of trust in their surgeon.

Introduction

Glenohumeral joint arthroplasty is an effective treatment for end-stage glenohumeral osteoarthritis; however, there are risks associated with the procedure and a significant recovery period.^{1,2} Patients must consider several factors when deciding whether to undergo surgery, and may collect information from multiple sources.³ The evidence base for shoulder arthroplasty continues to expand; however, the outcomes that matter most to patients are less well understood.

In hip and knee arthroplasty, qualitative studies have explored patients' motivations for surgery and influences on their decisions.³⁻⁵ Qualitative studies in shoulder arthroplasty are limited to questionnaires and an investigation into postoperative telerehabilitation.⁶⁻⁸ Further research into patient decision-making in shoulder arthroplasty may improve the content and format of information that healthcare staff provide to patients, and guide the outcomes that are captured in arthroplasty research.

Our aim was to address the following question: how do adult patients with advanced degenerative disease of the glenohumeral joint decide whether to undergo arthroplasty surgery, and what information is most important to them?

Methods

This study was conducted according to the consolidated criteria for reporting qualitative research (COREQ).⁹ The study team (ARD, SS, PR, RAS, DG, SA) consisted of orthopaedic surgeons and academics with expertise in qualitative research methodology.

Study design

This was a qualitative interview study using grounded theory.¹⁰ The interview schedule included questions on the elements of surgery and recovery which may influence decision-making (see Supplementary Material).

Participant recruitment

Purposeful sampling by age and sex was employed to ensure a breadth of perspectives and opinions.¹¹ Participants were recruited from shoulder clinics across three UK hospitals, and were identified by members of the upper limb teams from surgical waiting lists and shoulder clinic records.

Potential participants were sent an invitation letter, participant information sheet, and consent form. Written consent forms were collected prior to interviews and consent was confirmed verbally, prior to starting the discussion. Participants did not receive any compensation for their involvement.

Inclusion criteria

Adult patients aged 18 years and over, managed at participating hospitals, who were considering an elective shoulder arthroplasty were included. Sufficient English-language proficiency to participate in a semi-structured interview was required. Patients were excluded if they were considering revision shoulder arthroplasty, or were post procedure. Patients unable to give informed consent or take part in video or telephone interviews were excluded.

Interviews

The semi-structured interviews were conducted by the first author (see Supplementary Material). No relationship was established between the interviewer and potential participants prior to commencement of the study, and the interviewer was blinded to participants' histories. All interviews were performed remotely at a mutually convenient time for the participant and researcher.

Patient and public involvement

The interview schedule was developed following discussions with a local Patient and Public Involvement Group and previous shoulder arthroplasty patients.

Statistical analysis

The interviews were audio-recorded and transcribed verbatim. The transcriptions were read through by the interviewer while listening to the recordings to ensure the accuracy of the transcription. The analysis, conducted in line with the principles of grounded theory, was performed on the transcribed interviews using NVIVO 14, overseen by a health psychologist (SA) with extensive experience in qualitative analyses.¹²

After being read and re-read by the lead author (ARD), the full dataset was then coded systematically through an evolving process of open coding, axial coding, and selective coding.¹³ Following this, categories were generated through several cycles of discussion, review, and refinement with the wider team (AD, SA, SS, PR). Anonymized quotes from participants were used to highlight key points. Analysis commenced during recruitment and continued until saturation was reached.

Results

Interviews were conducted with 12 participants who were under the care of three different surgeons across two NHS Trusts (Table I) between July 2022 and June 2023. The dominant arm was involved in 67% (8/12) of participants. The American Society of Anesthesiologists grade was 1 in 33% (4/12) of participants, 2 in 25% (3/12), and 3 in 42% (5/12) (Table I).¹⁴ Attempts were made to contact a further nine potential participants; six could not be reached and three declined to participate. The mean duration of interviews was 31 minutes (standard deviation (SD) 17; 17 to 70). In one interview, the patient's son was present to provide support and additional information.

Two major categories emerged during the analyses. The first captured participants' motivations for undergoing shoulder arthroplasty and focused on the relief of pain and a return to a satisfactory lifestyle. The second explored the information that participants used to inform their decisions and the sources used to gather information. At the heart of this process was a decision by patients about whether they trusted their surgeon and their recommendations. Figure 1 summarizes the open codes and categories.

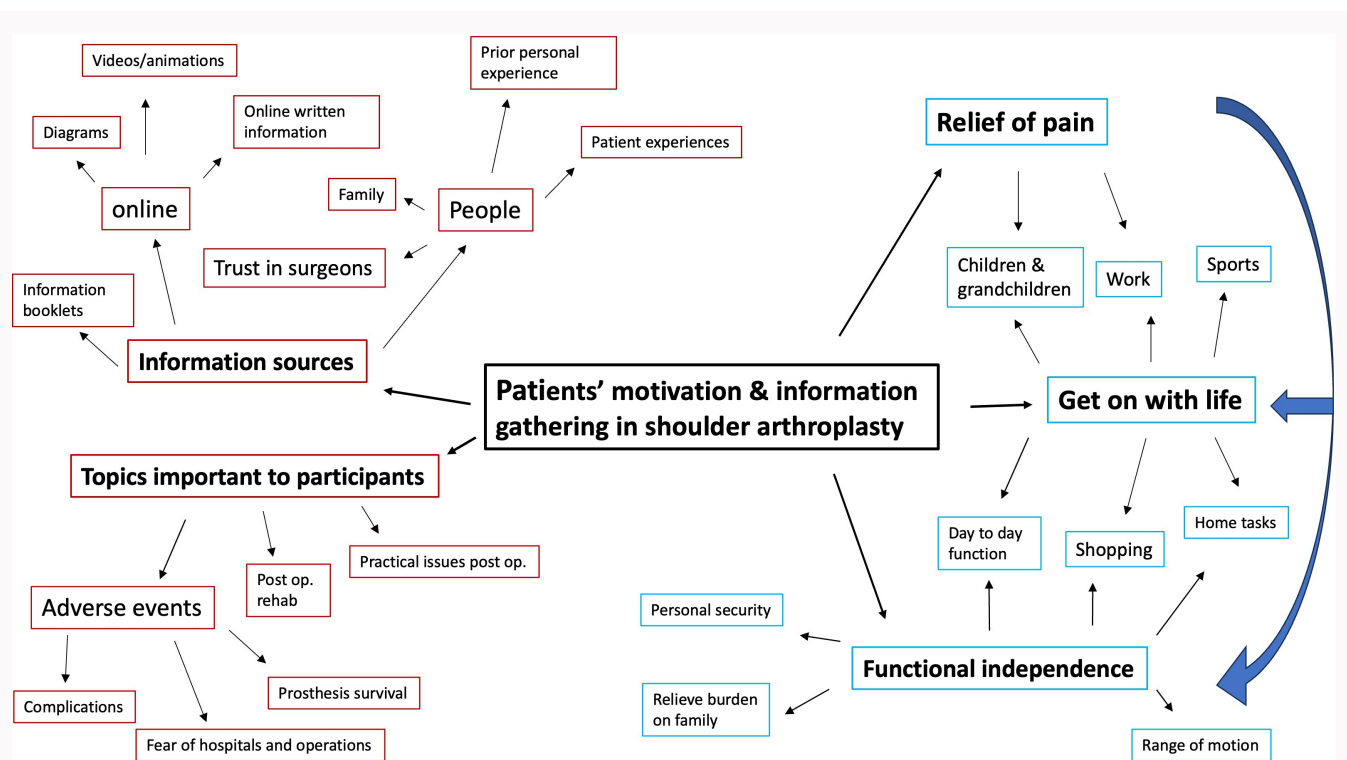
Participants' motivations: relief of pain

Relief of pain was key in motivating patients to undergo a shoulder arthroplasty. Alleviating the relentlessness of generalized pain and of pain that disturbed sleep was a high priority. It was a persistent stressor that negatively affected the

Table 1. Information regarding participants.

Participant number	Age, yrs	Sex	Diagnosis	Dominant arm	Actively employed	ASA grade	Rotator cuff condition
1	88	Female	End-stage osteoarthritis	Y	Retired	3	Torn
2	78	Male	End-stage osteoarthritis	Y	Retired	3	Partial tear
3	77	Female	End-stage osteoarthritis	Y	Retired	3	Intact
4	58	Female	End-stage osteoarthritis	N	Yes	1	Intact
5	35	Male	End-stage osteoarthritis	Y	Yes	1	Intact
6	39	Male	Post-traumatic degenerative disease	N	Yes	1	Intact
7	35	Male	End-stage osteoarthritis	Y	Yes	1	Intact
8	69	Male	End-stage osteoarthritis	N	Retired	2	Torn
9	84	Female	End-stage osteoarthritis	Y	Retired	2	Intact
10	80	Male	End-stage osteoarthritis	Y	Retired	2	Intact
11	73	Female	End-stage osteoarthritis	N	Retired	3	Intact
12	69	Male	Sequelae of trauma	Y	Retired	3	Torn

ASA, American Society of Anesthesiologists.

**Fig. 1**

Open codes and categories. Red = information gathering. Blue = participants' motivations.

mood of several participants. In addition, the lack of dependency on regular painkillers was highlighted:

"The main problem is constant pain, persistent pain all the time, night pain as well as day time...I said to myself, come what may, I have to have it done." (Participant 2, male, aged 78 years)

Participants described how pain superseded concerns about the risks of surgery. Over time, their symptoms reached a point where they became all-consuming, a problem they

could no longer ignore. The potential to improve the pain tipped the scales in favour of a joint arthroplasty:

"I was in two minds...but I think I need to get it done because I can't really manage the pain." (Participant 6, male, aged 39 years)

Some participants described night pain which disturbed sleep, leaving them exhausted the next day, and certain movements that caused discomfort, limiting the actions they were able to perform. The restrictions due to pain

were closely linked to an inability to return to normal daily activities and achieve independence, which compounded the problem.

Participants' motivations: functional independence and "getting on with life"

Independence in daily activities was highlighted by several participants as a fundamental reason to proceed with surgery. This included performing tasks around the house, relieving the burden on their family, and in one case feeling they were no longer as vulnerable when outside the house. An inability to perform basic tasks, such as reaching for a high object or changing a car tyre, was for some a key indicator that they needed to take the risk of having an operation:

"You've got to wash your hair, you've got to get dressed, things like that. I mean my husband will help, but I'm a type of person, I like to do my own things." (Participant 11, female, aged 73 years)

More broadly, participants described how their pain and functional restrictions had put their lives "on hold". Older participants described an eagerness to make the most of their remaining lifetime. A crucial point was whether their lifestyle was satisfactory according to expectations for that stage of their lives. Several older participants described how their current state was worse than they were prepared to tolerate in the context of ageing.

"We are old people, we've not got a great deal of time left. I think I would like as much comfort as possible." (Participant 10, male, aged 80 years)

They did not want to be defined by their shoulder problem, and the lost time weighed heavily on their deliberations. Participants who were previously engaged in high-impact sports like rugby, or military exercises, recognized they would need to modify their behaviour but hoped to return to some physical activity:

"I want to try and get back to be as active as possible rather than just accepting the fact that I'm getting a bit older and things are going to start breaking." (Participant 6, male, aged 39 years)

While all participants cited frustration at the time spent away from specific activities, younger participants in particular wished to return to work, sports, and playing with their children. Potential loss of employment, and the ability to support their families, was a large motivator to proceed with surgery, and the duration of waiting lists was a significant concern:

"I've been quite an active individual and at this point in time, my whole career and livelihood is under threat." (Participant 5, male, aged 35 years)

Information gathering: information sources

Participants' approach to information gathering was mixed; the majority sought out additional information regarding several elements of the surgery, perioperative process, recovery, and outcomes. The sources of information varied; there was a general preference towards online material, including enriched media, particularly those made by healthcare professionals. These included videos describing the surgery, animations to demonstrate the implants, and videos discussing postoperative care and rehabilitation:

"It actually showed you the insides of a shoulder...That was very, very useful." (Participant 10, male, aged 80 years)

Online content from healthcare institutions in the USA was frequently cited as being detailed, informative, and covering a range of topics; while websites were helpful, some patients still preferred discussions with their surgeon:

"No matter how long I'm on the internet, you know, I'd much rather discuss it." (Participant 9, female, aged 84 years)

Several participants would seek a minimum level of information, after which they were happy to trust their surgeon's opinion regarding the remaining considerations. They wanted to be informed of key elements but felt ultimately the surgical team had a more comprehensive knowledge of the field and trusted them to make appropriate decisions. This helped to manage their remaining concerns and the uncertainty of surgery:

"I have looked it up on the internet and I have printed out what's involved, but that's about it. Because I have full faith in Mr X." (Participant 3, female, aged 77 years)

One participant described a desire to "know information without overcomplicating the matter" (Participant 1, female, aged 88 years), while another patient wanted to know as much as possible. This highlighted the need to carefully explore patients' ideas, concerns, and expectations to ensure the information provided addressed the specific individual's needs:

"I need to know as much information as I can. Honestly, I'm really quite scared about this operation and what's going to happen afterwards." (Participant 5, male, aged 35 years)

Discussion with people who had been through the surgery was very helpful for those who had the opportunity, not only to help decide whether to proceed, but also to gather tips on how to manage the perioperative process:

"I think really the best thing that I have done is to be able to speak to the person who had a similar operation." (Participant 5, male, aged 35 years)

Some searched online for information on patient experiences, however for younger participants it was hard to find information relevant to people of a similar age. They felt most of the material was aimed at the "average" patient who was generally older. Younger participants were most likely to seek out the experiences of similar previous patients to discuss their specific concerns:

"Someone my age who has been through that, yeah, I couldn't find much information on that." (Participant 7, male, aged 35 years)

Several participants also relied on family members to process the information received at consultations or from other sources, and their recommendations carried a lot of weight.

"I chickened out because my daughter advised me not to have it done because of the COVID." (Participant 2, male, aged 78 years)

Despite seeking information from a range of sources, participants placed high value on discussions with the medical team, and for some the most important decision was whether to trust their surgeon. Once trust was established, rather than

a detailed assessment of the risks and benefits, they were happy to proceed based on the surgeon's recommendations:

"You have to trust the person you're dealing with." (Participant 9, female, aged 84 years)

Information gathering: topics important to participants

Participants were eager to both optimize their physical and mental condition pre-admission and comply with postoperative physiotherapy. The majority sought information on how to best prepare for surgery and how to manage in the immediate postoperative period. There was a recognition of their responsibilities in the recovery process, and several mentioned their high levels of motivation. The length of hospital stay was only mentioned on prompting, but was also of interest:

"The most important thing about this operation is the post-op physio... I know that as a concept, but I don't know how that's facilitated." (Participant 4, female, aged 58 years)

Details were sought on the practical components of perioperative care and the "nitty gritty postoperative period", such as how to put on a sling. Participants described that these details are easily overlooked during standard consultations, but may have a large impact on a patient's experience. Family members or carers who would be providing postoperative support were also keen to know what they could do:

"There are lots of little things, little tips about your day-to-day life." (Participant 10, male, aged 80 years)

The longer-term performance of the shoulder, including the risk of another operation, was raised mainly by the younger participants, and it affected the timing of their surgery. This group had the highest risk of needing further surgery during their lifetime. Several had specific lifestyle demands, and had queries about whether return to manual work or sports would cause excessive wear on the joint:

"It is important obviously if you need a new shoulder every ten years, or 15 years, or however long, but how I have it right now, all them consequences, it doesn't matter." (Participant 7, male, aged 35 years)

To set reasonable expectations for the future, some patients wanted to know "what the failure rate was" (Participant 8, male, aged 68 years). Generally, the older participants were less concerned about the survival of the prosthesis and were particularly keen to optimize their current condition. The issue of potential complications was raised on prompting, and participants were not as forthcoming with comments. Some had a keen interest in the risk of complications, whereas others were disinclined to know due to concern it would make them more anxious:

"I do worry about the complications... But the thing is that I need to have something done." (Participant 2, male, aged 78 years)

Discussion

There is a dearth of literature exploring patients' decision-making in shoulder arthroplasty. A recent meta-analysis of 19 studies investigating the experience of patients with shoulder pain included a single qualitative study focused on telerehabilitation post shoulder arthroplasty, with the remaining studies focusing on rotator cuff tears, frozen shoulder, and trauma.⁶

We aimed to understand the process of decision-making for patients with advanced degenerative disease of the glenohumeral joint who are considering arthroplasty surgery. A common narrative of this qualitative work was participants' eagerness to relieve their pain and get on with their lives. Participants were motivated, engaged, and sought out information from multiple sources. They were keen to both prepare for surgery and comply with recommendations for postoperative rehabilitation. Younger participants were eager to return to work, sports, and care for their children, however they found most information was aimed at the average, older patient and was less relevant to their situation. Older participants expressed a desire to make the most of their remaining lifetime. For all participants, trust in their surgeon was of high importance.

Shoulder pain can have a substantial effect on quality of life and lead to emotional, social, and physical dysfunction.⁶ Sleep disturbance due to shoulder pain was reported by several participants as highly impactful on their daily lives, and this may have an attritional effect on wellbeing.⁶ Pain has been identified as a key reason for those with advanced degenerative disease to consider joint arthroplasty, and their readiness correlated with the severity of pain.^{3,4,6} Returning to daily activities is important for patients with arthritis, and the restrictions associated with arthritis were a central theme in a study of hip arthroplasty patients.^{5,15}

Trust in a surgeon's recommendations and ability have previously been identified as important for patients undergoing joint arthroplasty, with some wishing to be fully informed of different management options, and others preferring the clinicians to decide on the best course of action.¹⁶⁻¹⁸ Shoulder arthroplasty patients may prefer shared decision-making in the preoperative period and greater surgeon-led decision-making about the type of procedure, the device used, and the management of the postoperative period.⁸ Focus groups in knee arthroplasty showed that some patients believe implant choice is best left to the surgical team, while others feel they should express their preference.¹⁹ A broad review of decision-making in elective orthopaedics and rheumatology reported that the majority of patients wanted a shared process.²⁰ Younger patients, highly educated patients, and those more familiar with the condition had a greater desire to be involved.²⁰ It remains important to explore, understand, and respond to patients' preferences where present.¹⁸ The family relationship has been highlighted as most important for a patient, and previous work has shown it may directly affect the management path.³

The risk of requiring revision surgery was considered by the majority of participants, and most acutely in younger participants with a higher lifetime risk. In this group, the benefit of surgery for symptom relief and quality of life was prominent, and they accepted the high likelihood of needing a future revision arthroplasty and the potential risk of complications. This trade-off and progression of symptoms until a "turning point" was reached has been identified in previous work.^{4,19}

Presenting information appropriately to patients is important. Higher patient expectations are associated with improved outcomes, however satisfaction is lower when preoperative expectations are not met.^{21,22} Predictors of postoperative patient satisfaction at one year were: meeting

preoperative expectations, adequate relief of pain, hospital experience, and 12-month and preoperative Oxford Shoulder Scores.^{22,23}

This study was undertaken across two large urban NHS Trusts involving three surgical consultants, across patients with a range of ages and social backgrounds. As participants were recruited from waiting lists, we could not be certain they would ultimately proceed with surgery, however they were sufficiently motivated to be placed on a waiting list.

Capturing patients at point of referral to secondary and tertiary care could provide greater insight into the reasons for continuing nonoperative management, and further explore the narrative about trust in their surgeon and healthcare providers.

Relief of pain and return to normal life were key motivations to undergo shoulder arthroplasty. The risks of revision surgery and adverse outcomes were considered to a varied extent. Participants' relationship with their surgeon was important, and they sought additional information online. Examples of prior patients of a similar age and functional demand were considered valuable.

Social media

Follow A. R. Davies on X @andyrhysdavies

Supplementary material

Interview schedule.

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Data sharing

The data that support the findings for this study are available to other researchers from the corresponding author upon reasonable request.

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Ethical review statement

The study was granted NHS Research Ethics Committee approval (REC reference 21/NI/0137).

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