

Quality of life after transsphenoidal pituitary surgery: a qualitative study

Shelly Lwu · Idara Edem · Beverly Banton ·
Mark Bernstein · Allan Vescan · Fred Gentili ·
Gelareh Zadeh

Received: 29 May 2012 / Accepted: 17 July 2012 / Published online: 7 August 2012
© Springer-Verlag 2012

Abstract

Background Microscopic and endoscopic approaches are both utilized for transsphenoidal resection of sellar/parasellar lesions. The endoscopic approach has been gaining popularity over the past decade; however, quality-of-life studies comparing the microscopic and endoscopic approaches are lacking. We aimed to compare the patients' perceptions of their postoperative recovery periods following microscopic and endoscopic procedures.

Methods Qualitative research methodology was used for this study. Each participant underwent a single semi-structured, open-ended interview based on an interview guide. Each participant had undergone at least one microscopic and one endoscopic transsphenoidal procedure for resection of a sellar/parasellar lesion. The interviews were audiotaped and transcribed. The transcripts were then analyzed for overarching themes. Demographic information was also collected.

Results The following five overarching themes emerged from the data: (1) the endoscopic procedure was better tolerated than the microscopic procedure and was the preferred approach by 22 out of 27 patients should they require another surgery in the future; (2) most patients did not know that they had undergone two different surgical approaches; (3) other than an unpleasant malodorous smell, rhinologic

complications (including drainage, crusting, and alterations in smell) following the endoscopic procedures were comparable to those following the microscopic procedures; (4) the patient's postoperative experience after the microscopic procedure had an impact on his/her expectations of the endoscopic procedure; (5) any significant pain or discomfort experienced from either procedure was mainly related to the nasal packing or fascia lata graft donor site.

Conclusions The endoscopic procedure was the preferred approach over the microscopic approach by the majority of patients because of its better tolerability, despite comparable rhinologic complications.

Keywords Endoscopic · Transsphenoidal · Pituitary · Quality of life · Qualitative study

Introduction

Sellar and parasellar lesions can be resected surgically through a transsphenoidal, endonasal or sublabial approach, with a microscope or an endoscope. Over the past decade, the endoscopic approach has been gaining popularity, and there is an emerging body of literature comparing the endoscopic and the microscopic approaches. A recent systematic review suggests that the endoscopic approach is associated with shorter hospital stay, fewer rhinologic complications, and less pain and discomfort than the microscopic approach [6]. To date, quality-of-life studies comparing the two approaches have not been carried out, and there is no information on patients' perceptions and thoughts about an endoscopic procedure. Validated instruments, such as the Sino-Nasal Outcome Test-22 score and rhinology-specific mean score, have been used to quantify rhinologic complications. An improved rhinologic quality of life has been shown with the endoscopic approach [2, 4]. Whether in fact

S. Lwu · I. Edem · B. Banton · M. Bernstein · F. Gentili · G. Zadeh
Division of Neurosurgery, University of Toronto,
Toronto, Ontario, Canada

A. Vescan
Department of Otolaryngology Head and Neck Surgery,
University of Toronto,
Toronto, Ontario, Canada

I. Edem (✉)
Toronto Western Hospital,
399 Bathurst Street, 4 W,
Toronto, ON M5V 1A8, Canada
e-mail: iedem@qmed.ca

this translates to improved outcomes from a patient's perspective is not known and has not been investigated.

Qualitative research methodology has traditionally been used in the social sciences to examine human behavior and experience. In this respect, it lends itself particularly well to quality-of-life evaluations in medicine. In this study, we aim to compare the patients' perceptions of their postoperative recovery periods following microscopic and endoscopic procedures using qualitative research methodology.

Methods

Study design

We conducted a qualitative study to compare patients' perceptions of their postoperative recovery periods following microscopic and endoscopic transsphenoidal resections of sellar lesions. All of the patients had undergone at least two transsphenoidal procedures, one microscopic and one endoscopic.

Setting and participants

All patients were ambulatory patients recruited from the database of the senior author (F.G.) of patients who have undergone both microscopic and endoscopic transsphenoidal procedures. All endoscopic approaches were performed by the senior authors (F.G. and G.Z.). Inclusion criteria were: (1) patients who had undergone at least one microscopic and one endoscopic transsphenoidal procedure for resection of a sellar/parasellar lesion; (2) patients who were free of cognitive deficits.

Sample size

A sample size of between 25 to 30 patients was sought to achieve saturation [3, 5]. "Saturation" in qualitative research refers to the point where further interviews do not contribute to new concepts.

Data collection

A single semi-structured, open-ended interview was conducted with the participants. All interviews were conducted in person face to face by the first author (S.L.), except for six interviews that were conducted over the phone for logistical reasons. In two interviews, the patient's relative acted as a translator when necessary. The interviews were conducted based on an interview guide (see [appendix](#)), but themes were explored as they came up during the interview. All interviews were audiotaped and transcribed. Demographic information, including age, sex, education, and occupation, were collected. Surgery dates and surgical approaches were also recorded.

Data analysis

Interview transcripts were analyzed through modified thematic analysis, with open and axial coding. The transcripts were analyzed by two of the investigators.

Research ethics

University Health Network Research Ethics Board approval was obtained prior to the start of the study. Participation was voluntary. Consent was obtained. Data, including audiotapes and transcripts, were kept confidential and stored in a secure location.

Results

Patient information

Of 37 eligible patients, 27 agreed to participate in the study and 10 declined. Most of the patients who declined to participate were unable to attend an in-person interview because of other commitments. A few patients declined because of ongoing illness unrelated to their pituitary disease. Demographic data for the participants are shown in [Table 1](#). Sixteen patients had undergone two transsphenoidal procedures (one microscopic and one endoscopic), while 11 patients had undergone three transsphenoidal procedures (at least one microscopic and one endoscopic). Twenty-six patients had pituitary tumor as their pathology, while one had a Rathke's cleft cyst.

Thematic analysis

Analysis of the interview transcripts yielded five themes. The themes are described below and illustrated with direct quotations from the interview transcripts.

1. *The endoscopic procedure was better tolerated than the microsurgical procedure.* Most patients experienced less pain and swelling in the immediate postoperative recovery period with the endoscopic approach and consequently had shorter admissions. When asked which approach they would choose if another surgery were to be required in the future, 22 of 27 patients interviewed chose the endoscopic approach.

"It was almost like not having surgery. People who I told I was going in for brain surgery, when they saw me afterwards, you know, I didn't look like I had surgery." Patient 2

Table 1 Patient demographics

Characteristic		Value
Age (years)	Range	25–77
	Mean	56
Sex	M	12
	F	15
Education	Primary	1
	Secondary	5
	Post-secondary	21
Occupation	Engineering	1
	Administrative	3
	Educator	3
	Homemaker	1
	Healthcare	3
	Service industry	2
	Retired	7
	Other	7
Pathology	Pituitary tumor	26
	Rathke's cleft cyst	1
Total number of surgeries	2 surgeries	16
	3 surgeries	11

“It was just so easy this time. It was almost like the next day, I was back to normal...One day I had surgery, and the next day I was almost going home. It was amazing.” Patient 13

“You look like yourself. There's not a lot of outward damage so the recovery from that was a lot better.” Patient 14

“I said to my husband after the surgery I felt night and day difference from what I had felt the first time.” Patient 15

“I could have walked out the next day or two. I was very comfortable. Didn't feel any pain. My recovery period was very, very quick. By my second day, I was feeling pretty good.” Patient 16

“There was no discomfort, nothing. There was no comparison. This one I thought I went some place with a little outpatient operation and go home.” Patient 27

2. *Most patients did not know that they had undergone two different surgical approaches.* As well, most patients did not appreciate the technical and technological

differences between the microscopic and the endoscopic approaches, preferring to understand the procedures as being done “through the nose.”

“I actually didn't know that there was a difference between the two surgeries.” Patient 3

“Thinking back, if I hadn't been told that they were done differently, I'm not sure that I would have known that they were done differently.” Patient 8

“I didn't know I had two different procedures.” Patient 12

“Even though they were two totally different technologies, it just meant that we were going through the nose. It was the same thing, through the nose, the equipment used, the sinuses. Mentally it was the same thing for me.” Patient 15

“I'm not in the position to understand the difference in equipment. I knew that I was under the knife and that was it.” Patient 23

“To me, both surgeries were the same. I didn't know they were different.” Patient 24

3. *Other than unpleasant malodorous smell, rhinologic complications (including drainage, crusting and changes in smell) following the endoscopic procedures were comparable to those following the microscopic procedures.* The rhinologic effects of surgery varied from essentially none to chronic sinusitis and nasal discharge. Some patients experienced rhinologic complications following both endoscopic and microscopic procedures. Some patients experienced worsening of their rhinologic symptoms after the endoscopic procedure, while others noted an improvement. There did not seem to be more complaints following one type of procedure or another, except for the foul odor within the nose that seemed to be more common following the endoscopic procedure. The foul odor typically resolved within weeks to months.

“After the first surgery, there was a lot of crusting for the first few days, but with these last two, it was just all plugged up on the right hand side. Less crusting, but more mucus.” Patient 4

“I recall those being about the same following all three operations.” Patient 5

“About the same, nothing major.” Patient 9

“The stuff coming out the nose, the first one was not necessarily a lot of stuff coming out of my nose for a longer period of time, it was messier. Whereas this surgery, the more recent one I had, it was not a lot of

blood or crusting. It was just having to blow a lot of things out to clear the sinuses, but it didn't last very long. So more sinus problems for the second surgery, but more stuff coming out of the first one." Patient 14
 "I had a foul, musty smell. The bad smell was awful after the first surgery. After the second surgery, it wasn't as prominent. It was more lingering. It would build up as the crusting got worse." Patient 15
 "My wife would say: 'what's that smell? Of course in my nose after the surgery there would be a little bit of buildup and basically it turned out it was my nose.'" Patient 17
 "I did have quite a noticeable bad smell that other people reported. I couldn't smell it, of course. I guess they could smell it on my breath and breathing. It lasted quite awhile, in the neighborhood of couple of months." Patient 21
 "It was unbelievable and I could tell when the scabs were going to come out because they were big and you could feel it up in there, in your nose, and also that smell. You get that smell and I think: Oh another one's coming." Patient 22

4. *The patient's postoperative experience from the microscopic procedure had an impact on his/her expectations of the endoscopic procedure.* The patient's experience with the previous procedure(s) affected him/her either positively or negatively going into the endoscopic procedure. The patients had well-formed expectations of the postoperative recovery period for the endoscopic procedure.

"The first one was more painful. Probably psychologically I was more prepared after the second surgery." Patient 3

"I think it was just easier cuz I knew what to expect. There were no surprises." Patient 9

"I was worried going into the second surgery because the first one had been so traumatic. That's why I really postponed it until the last minute, until I really had to." Patient 13

"When I was going in for surgery, the thing coming in my mind was: was there going to be packing in there? I guess it depends on how much discharge is coming. I guess they will put packing in there. Of course my leg, I'm expecting to wake up with a sore leg." Patient 17

5. *Any significant pain or discomfort experienced from either procedure was mainly related to nasal packing or fascia lata graft donor site.* Overall, patients complained very little about the pain they experienced postoperatively in the midface, but they were surprised by

the amount of pain associated with the removal of the nasal packing and the fascia lata graft donor site.

"I do recall waking up in recovery with just extreme pain and not being able to understand why my leg was hurting...The pain was very significant but it was from the graft, not from the other area." Patient 8

"I had a muscle biopsy on my right side. That was supposed to take a piece of muscle to kind of plug any CSF leak, so that was the thing that gave me much more discomfort than the surgery through the nose... That was more painful than anything else. Distracted me from the actual surgery." Patient 11

"I actually had an incision in my leg, which was probably more painful than actually what they had done." Patient 17

"I find the worst part was when they pulled the packing out. That, to me, was the worst part of having the surgery done that way." Patient 18

"I had the packing up my nose that they had to take out after I was awake and that was unbelievably painful." Patient 19

Discussion

In this study, the postoperative experiences of patients who had undergone both microscopic and endoscopic transsphenoidal pituitary surgeries were explored and compared using qualitative research methodology. Mainly, the endoscopic procedure was better tolerated than the microscopic procedure. When asked which procedure they would choose if they were to need another surgery in the future, the majority of patients chose the endoscopic approach. This result is further strengthened by the finding that some patients did not appreciate the differences between the two technologies at the time of the surgeries, despite appropriate discussions at the time consent was obtained. This suggests that there is an element of trust in the physician, that the physician would do what is appropriate and necessary, and that the patient did not require all of the details. Some patients did associate less tissue trauma and less pain and swelling with the endoscope. Interestingly, this perception did not always correlate with a higher level of education and may have been due to patient's self-education with web-based resources on the procedure.

Interestingly, despite comparable rhinologic complications following both endoscopic and microscopic procedures and more complaints of unpleasant malodorous smell in the endoscopic group, the majority of patients would still choose the endoscopic approach over the microscopic approach. This may be because the malodorous smell was a self-limited

process and subsided with the resolution of scabbing and clearance of the materials (e.g., gelfoam and surgicel) used for repair of the sellar floor. All patients experienced the endoscopic approach as the necessary re-do surgery for a failed previous procedure, and therefore it might have been difficult for them to separate the successful outcome associated with the endoscopic approach with purely the postoperative experience; however, there were patients who went on to have radiation therapy or adrenalectomies after their endoscopic procedures who still chose the endoscopic approach over the microscopic approach. As well, it may be that patients are willing to accept the necessary complications if a successful outcome can be obtained. This result builds on findings from other researchers, who have shown that for patients who have undergone both a sublabial and endonasal procedure, the endonasal procedure afforded easier recovery, less pain, better nasal airflow and a shorter hospital stay [1]. Indeed, the endonasal approach is the procedure of choice for both patients and surgeons in the treatment of various sellar and parasellar tumors. More so, the endoscopic endonasal approach has gained popularity over the microscopic approach, both for its minimally invasive nature and for the greater degree of patient satisfaction it affords.

Of the five patients who did not choose the endoscopic approach as the approach they would have again, two patients felt that the rhinologic complications postoperatively were more debilitating than what they had experienced after the microscopic approach. One patient was unable to decide which procedure she preferred because of the rhinologic complications she experienced with both approaches, and one patient was undecided because she had minimal complaints with both approaches. Another patient felt that she was unable to make a decision without the advice of her family physician.

It is not surprising that the patients' previous experience(s) have a considerable impact on their expectations of their subsequent surgeries and postoperative recovery. As expected, when a negative experience has been established in a patient's mind, it may affect subsequent decisions made with regard to further treatment. Similarly, one might argue that the patient's expectations of postoperative pain and length of hospital stay are frequently related to what he/she has been told to expect preoperatively. This likely explains the element of surprise at the severity of pain associated with the removal of nasal packing and the fascia lata graft donor site, as the discussion preoperatively is typically focused on the nose. Without minimizing the amount of pain the patient actually experienced, it is possible that because the pain was unexpected, it was perceived as worse.

Limitations of the study

The major limitation of a retrospective qualitative study of this nature is the reliance on the patient's memory. In some

cases, many years have passed between when procedures were performed and when the interview was undertaken. As well, surgical technique and surgeon experience may have contributed to the patients' postoperative recovery, and it is difficult to account for this.

Conclusions

As far as we know, this is the first time that qualitative research methodology has been used to explore quality-of-life issues with regard to the postoperative recovery following endoscopic and microscopic transsphenoidal surgeries for pituitary tumors. We believe that qualitative research lends itself particularly well to quality-of-life studies, utilizing semi-structured interviews to bring out patient attitudes and ideas with the flexibility to explore the basis for them. Most quality-of-life studies rely on validated scoring systems, and while they allow for quantification of the intended measures, non-quantifiable factors may not be taken into account.

The endoscopic endonasal transsphenoidal approach is well tolerated by patients and is the preferred procedure for most patients over the traditional microscopic approach. Rhinologic complications are comparable following microscopic and endoscopic approaches except for foul odor, which seems to be more common following the endoscopic approach. Discussion with regard to surgery should take into account the patient's previous experience with other surgical procedures. Since the principle complaint associated with the endoscopic approach is pain from the nasal packing or fascia lata graft, more information should be given and more time should be spent discussing this with the patient so that he/she is made well aware that it may contribute significantly to the pain experienced postoperatively.

This study highlights the fact that "minimally invasive" is a physician-centered concept and that patients often do not perceive concepts in the same way. As we have found, patients perceive minimally invasive as being related to a smoother postoperative course.

Conflicts of interest None.

Appendix

Interview Guide

Open microscopic

1. When was your surgery?
2. About how long were you in the hospital after surgery?
3. Were there any complications? (CSF leak, endocrine dysfunction)

4. What was your level of pain/discomfort? How long did this last? Did you require pain medication in the hospital or at home?
5. Did you experience any alterations to your smell or taste? Any numbness to your lips/mouth/nose? Any persistent drainage from the nose? Any nasal crusting? Anything else you experienced during your recovery period?
6. How long was it before you felt like you were back to your normal self?
7. How long was it before you were back to work or your normal activities?
8. Were there any long-standing side effects as a result of surgery?
9. Anything else you wish to add with regard to your experience (positive or negative)?

Endoscopic

1. When was your surgery?
2. About how long were you in hospital after surgery?
3. Were there complications? (CSF leak, endocrine dysfunction)
4. What was your level of pain/discomfort? How long did this last? Did you require pain medication in the hospital or at home?
5. Did you experience any alterations to your smell or taste? Any numbness to your lips/mouth/nose? Any persistent drainage from the nose? Anything else you experienced during your recovery period?
6. How long was it before you felt like you were back to your normal self?
7. How long was it before you were back to work or your normal activities?
8. Were there any long-standing side effects as a result of surgery?

9. Anything else you wish to add with regard to your experience (positive or negative)?

Comparison

1. Please compare the two surgeries with regard to your experiences during the recovery period and beyond, including pain, discomfort, etc.
2. Did you see any advantages or disadvantages with each procedure?
3. Was there a procedure that you preferred?
4. If you were to require further surgery, which procedure would you prefer?

References

1. Dusick JR, Esposito F, Mattozo CA, Chaloner C, McArthur DL, Kelly DF (2006) Endonasal transsphenoidal surgery: the patient's perspective—surgery results from 259 patients. *Surg Neuro* 65:332–342
2. Graham SM, Iseli TA, Karnell LH, Clinger JD, Hitchon PW, Greenlee JD (2009) Endoscopic approach for pituitary surgery improves rhinologic outcomes. *Ann Otol Rhinol Laryngol* 118:630–635
3. Hersht M, Massicotte EMM, Bernstein M (2007) Patient satisfaction with outpatient lumbar microsurgical discectomy: a qualitative study. *Can J Surg* 50:445–449
4. Karabatsou K, O'Kelly C, Ganna A, Dehdashti AR, Gentili F (2008) Outcomes and quality of life assessment in patients undergoing endoscopic surgery for pituitary adenomas. *Br J Neurosurg* 22:630–635
5. Khu KJ, Doglietto F, Radovanovic I, Taleb F, Mendelsohn D, Zadeh G, Bernstein M (2010) Patients' perceptions of awake and outpatient craniotomy for brain tumor: a qualitative study. *J Neurosurg* 112:1056–1060
6. Rotenberg B, Tam S, Ryu WH, Duggal N (2010) Microscopic versus endoscopic pituitary surgery: a systematic review. *Laryngoscope* 120:1292–1297