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Perspective

Real Time Patient and Surgeon Concurrent Thought-Process With Femto Second Laser Cataract Surgery

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Abstract

The professional ophthalmology literature addresses surgical procedures, like the lensectomy, IOL implantation and new associated technologies including the Femto second laser, with elegant and erudite accuracy. The limiting factor of such a sophisticated body of literature is the absence of surgeons and more so, patients psychological and emotional feelings towards their "real time" surgery experience. This paper is a unique study, albeit that of one surgeon and one patient, to apture the subjective details of a Femto second laser cataract surgery procedure.

Keywords: *Lensectomy; Real time; Cataract surgery; femto*

A patient preparing for and undergoing a femto second laser cataract procedure and his cataract surgeon recorded a step-by-step account of their concurrent "thought processes" during the stages of surgery. The narrative was planned in the pre-stages of care through mutual discussions between the surgeon and the patient and then recorded by the respective participants in real-time during each phase of the surgical experience. The goal of the paper is to potentially enhance the relevancy and quality of surgeon's interactions and relationship with their patients before, during and after their cataract surgery.

The paper uses an interview like format with the patient and the surgeon who answer a specific set of questions regarding their personal and in the case of the surgeon professional considerations. The questions address pre-op decision making and considerations day of surgery issues the procedure and immediate post-op and recovery. The questions deal with many of the emotional feelings the patient experiences during the process and many of the issues that all cataract surgeons deal with during the full cataract surgery process.

This paper will not teach ophthalmic surgeons anything new of a technical nature regarding cataract surgery. It may, however, introduce the cataract surgeon to the more sensitive, subjective aspects patients and surgeons (themselves) consciously or subconsciously deal with during a very delicate human experience. After all, as clinical and technical as the tangible and material aspects of surgery may be on its surface, it's really a much deeper, almost spiritual experience in the minds and hearts of surgeons and patients.

Perspective

The new femto second laser cataract surgery procedure is offering surgeons an opportunity to advance their art and science through a technology that significantly increases accuracy and safety of the longstanding lensectomy and IOL implant procedure. This also can be a unique opportunity for progressive cataract surgeons to examine their approach to the multifaceted dynamics regarding the most important element in the procedure.

This paper presents a unique account of the personal "thought process" of a patient preparing for and undergoing a femto second laser cataract procedure and the concurrent thoughts of the ophthalmic surgeon (with 38 years' experience in lensectomy and IOL implanta-

tion) performing the procedure. It examines the parallel thinking tracts of the surgeon and the patient during the pre, peri, intra and immediate post-operative stages. The concurrent narrative was designed through mutual discussions between the surgeon and the patient during the pre-stages of care and then, recorded by the respective participants in real-time during each phase of the surgical experience.

The patient and surgeon in this "experiment" represent an optometrist and an ophthalmologist who have worked together for 15 years. While such a relationship might suggest potential bias in the "thought process" being examined, it actually promoted a broader frame of reference regarding the patient's perspectives in that the subject-patient (optometrist for over 45 years) brought 2 characteristics to his role. First, having discussed cataract surgery with many thousands of patients over the years, he was able to measure a broader scope of thoughts and emotions patients bring to the experience. Second, notwithstanding his background, the optometrist attests unequivocally to the fact that he indeed wrestled with the very same thoughts and emotions his patients had shared with him for many years.

Ultimately, the goal of the paper is to have the surgeon-reader give some thought to what he/she might be thinking about during the discrete stages of laser (and standard) cataract surgery and more so, regardless of post-operative outcomes, how those thoughts might be consistent with and/or complementary to the surgical patient's thoughts and emotions. Such an exercise, especially with laser cataract surgery, might enhance the relevancy and quality of surgeon's interactions and relationship with their patients as they increase the quality, accuracy and safety of the surgical procedure itself.

While not a purely scientific writing form, the patient and surgeon narratives that follow are presented in the first person ("I", "we", "my", "me") to accentuate the personal thinking and reflections that are the essence of the paper.

Pre-Operative (Planning) Stage

From the patient's perspective

From among the many thoughts and emotions that evolve during a patient's decision making process regarding cataract surgery, the following tended to be the principle issues I dealt with:

1. Do I really want to have this surgery?

Even though vision in my better eye had deteriorated to barely functional levels, the fear factor regarding surgery never goes away and it can easily produce temporary (sometimes prolonged) postponements of an obviously needed procedure. In my case, some of the considerations below reduced my fears.

2. Is this new technology being recommended (femto second laser) worth the extra money; and is my surgeon giving me an honest appraisal of the benefits and his feelings that "this is right for me"?

If a surgeon has "oversold" the recommended technology in discussion and/or "marketing" (in-office and/or mass media), a patient may easily start measuring, if not questioning, the surgeon incentives. I felt objectivity should be the key in such discussions and having the surgeon voluntarily share the pros and cons of his/her recommendation would be the best approach. I find that most patients (myself included) weigh such an approach along with other information they may gather (see #4 below) as straight forward, sincere and honest advice.

But in all cases, surgeons should provide the patient with a statement (verbally and in writing) of their competencies and experience, especially in the new technology to be employed. This is rarely viewed by the patient as "bragging", especially when the patient is establishing a relationship with a new surgeon. Neither is it inappropriate, in my judgment, for a patient to request references (other patients and/or professionals).

4. What does the research say (Internet websites and readings) and maybe more so, what do people who have had the procedure think about it? What does my optometrist think about this (in the case of a referred patient)?

Internet website referrals (non-commercial) like NEI, NIH, GOV, FDA, WebMD etc., are generally excellent sources of information on

new procedures. Commercial websites are merely advertisements and for me, generally don't reflect well as objective informational sources. Nor have I ever felt strongly about "patient testimonials". But in my case, an objective assessment from a person I knew that had the femto procedure did make a strong impression on me. (But here, I must admit a bias, because I was also seeing outstanding success in our post-op patients).

5. What disruptions will this surgery create in my personal and professional schedule and for how long?

Whether it was subliminal or conscious, things as small as planning an ideal surgery date getting PHP medical clearance, arranging a driver, missing a day of work more so, missing my beloved running, gym and outdoor activities for a week or so, all became major issues in my mind and cause for me to give second thoughts about having the procedure done (or was it all really "suppressed fear?").

6. Finally, somewhat of a surprise to me and of interest was the psychological effect produced by the pre-operative workup itself.

While the battery of tests and measurements done in the pre-op workup are routine for the ophthalmic technicians performing them, they present a somewhat surreal and intimidating experience for a layperson (as I felt I was). The tests, as mundane as they may seem to eye care professionals, are undoubtedly a traumatic experience to the uninitiated (myself included). In essence, they represent the "last step" to commitment and I can say with relative certainty that had the slightest thing gone wrong (i.e., a misstatement by a technician, a glitch in an instrument, even an unpleasant office or administrative person) it could easily have created "an opportunity" to postpone (and may be even rethink) the procedure. In fact, nothing did go wrong and everyone was wonderful – kind, informative and caring. "I guess I was stuck!".

From the surgeon's perspective

As a surgeon, a clinical scientist and as a patient (I have personally had the femto second laser cataract procedure), I believe the femto second technology is a higher level of surgical care and thus, I want to recommend and provide it to my patients. I would qualify my presentation to patients on the femto second laser procedure as "enthusiastic" simply because of my personal experience and my unequivocal belief in the technology being more accurate, precise and safer (less intraocular risk) than the traditional lensectomy.

My presentation to patients is objective, scientific and as mentioned above (by the patient), I do identify some of the "cons" (besides cost) of the procedure (longer procedural timeframe, critical need for fixation, risks of movement of the patient during the process, etc). But in lieu of any medical or surgical contraindications, I try to convince the patient that the differential in cost is more than offset by the increased assurances of accuracy and the reduced risks I can provide as their surgeon using femto second technology.

Finally, I plan every step of the surgical procedure and select the optimal IOL for the patient, but I see myself as only a part of a multifaceted process in the overall surgical experience. Fortunately, I am also the captain of the team and can stipulate to the troops what level of care I expect both personally and professionally from myself and equally, from every person in the process. In other words, I am no stronger than the weakest link in the surgical experience for the patient. Any break in that chain that might produce technical mishaps and no less, patient discomfort or anxiety and I feel the patient has not been served properly.

Day of Surgery

Peri-Operative Stage

Patient

One would expect the anxiety level to elevate on the day of surgery, but for two reasons, I felt more relaxed than I had during the previous week. First, any stress from the decision-making process was now history. But second, and of far greater impact, the atmosphere at the surgery center I used, from its physical appearance to its cordial, accommodating, informative and caring staff including the administrative personnel and right on through to the technicians and nurses, were all exceptional. Anything less at any level and I'm sure my previous anxiety levels would have been revived.

Demographically speaking, the vast majority of patients having cataract surgery (usually seniors) have experienced some sort of a surgical encounter (s) in their lifetime. One common denominator in that process, almost universally, is the anesthesiologist (sometimes a nurse anesthetist) and the traditional pre-operative "bedside" interview. Such an interview is non-traumatic (physically or emotionally) and most patients don't even weigh it as a significant event (though it certainly is) in the overall process. Maybe it's just me, but I have always found this particular part of the pre-operative experience to be somewhat of a seminal event.

To the patient, the anesthesiologist is a relatively removed, "3rd party" in the surgical experience, indeed most often a "stranger" dropping in for a brief, but no less intimate encounter. Not enough accolades can be accorded such a professional role, especially when you think about this individual having to "intrude upon" multiple patients in rapid order with little to no introduction other than their own, "Hi, I'm the anesthesiologist", most of the time not even giving a name and surely, it's likely will not to be remembered by the patient. The other statement absents from this greeting is, "I'll have your life in my hands for the next 30 minutes or so." Pretty profound occurrence when you think about it that way.

Understandably, this encounter is usually rather sterile and almost abrupt. But I have always thought, what if it were to be warm and personal exchanges, albeit brief, at such a "tender" moment? Wouldn't that be nice?. Again, understandably it doesn't happen very often, but when it does, it's special. And in fact, it happened to me in my pre-operative care and it meant a lot. Thank you, Dr." what was his name?".

Of course, a friendly anesthesiologist could never substitute for a caring pre-operative nursing staff that is effectively the backbone of the whole experience. It's hard to imagine the combination of clinical and communication skills, empathy, compassion, energy and efficiency needed to be an effective surgical nurse. It's even harder to imagine the amount of human beings capable of achieving that level and dedicating themselves to the challenges of the nursing profession. I have always felt so fortunate that we have such great people as nurses in this world and even more fortunate that in almost every surgical experience (major or minor) I have had over my 70 years, I have been able to enjoy and appreciate humanity's gift of nurses. And my cataract surgery was no exception.

Surgeon

As most surgeons would likely agree, the morning of surgery is quite a hectic time. I always arrive early to the surgery center to review the "landscape." Are there any nurses out sick? Are there any no-show patients? Is there any change in the surgery schedule?

After the most fundamental questions are answered, I go to my "pre-flight" checklist of critical items including microscopes, phaco machines, video equipment and of course, the femto second laser. Is everything working properly and set to my strict and proper standards? I always feel more comfortable evaluating and reviewing even the newer instruments that have internal self-testing.

All surgeons have their own approach to their specific checklist so as to make certain that the entire process feels fluid-in-motion and run flawlessly. This is where all surgeons must rely upon and feel absolute confidence in a dedicated and trusted OR team. It is this "team" that assures a consistent and high level of care in any surgery.

On the morning of surgery, I like to spend some time with the patient "re-discussing" the procedure and answering any questions. This did not happen with my own personal femto second cataract surgery experience and notwithstanding my understanding (as a cataract surgeon) of the entire process, I nonetheless felt somewhat disappointed. But as a surgeon, I can also understand that this is not always possible as I too, from time to time miss such opportunities with my patients. But in all cases, I never miss pre-op time spent with the anesthesiologist and the OR nursing team clarifying pre-op orders and evaluating any special medical conditions for our sicker patients. Also, correct surgery site markings are clearly recorded and verified and I conduct a final review of the patient's medical record. After conclusion of all reviews, with the femto second procedure, I like to return to the instrument once more and verify all settings for the patient's specific procedure.

Intra-Operative Stage

Patient

In anticipation of writing this paper, the surgeon and I (and the anesthesiologist) agreed to minimize my sedation during the surgical procedure (unless indications required otherwise) so I could cogitate relatively clearly during the intra-operative stage of my experience. This opportunity allowed me to record a series of observations and questions that I can vividly recall as I went through the process.

Again, in the interest of total disclosure, I cannot deny that a number of the questions that ran through my mind were of a clinical and technical nature, not likely for a layperson. However, as an inexperienced neophyte to the actual surgical experience itself, I reacted in real-time entirely as a layperson and underwent (I feel) their same thoughts and emotions. Thus, in the spirit of the stated goal of this paper (i.e., "how the surgeon-reader's thoughts might be consistent with and/or complementary to the surgical patient's thoughts and emotions"), I will limit my series of observations and questions to only those a layperson would likely think about during the surgery.

1. Where are they taking me?

Of course, when they started to move the gurney from the pre-op staging area, I figured my first stop was going to be the femto second laser. But had the nurses not articulated that, I'm sure I would not have been entirely certain as to where I was going. Undoubtedly, the layperson would be thinking the same.

2. What are they doing?

The step-by-step femto second laser process is complex and unless the surgeon was "walking me through" what he was doing, I would have been confused and probably, increasingly anxious. Being advised, step-by-step was reassuring and even enjoyable.

3. Why the delay?

After the nuclear fragmentation and capsulotomy (my technical "hat"), there was a substantial delay before I was transported to the OR. Had I been a layperson, this may not have bothered me, but I still would have liked to have known "why." However, if I had the full amount of sedation, I probably wouldn't have known or cared.

4. Why am I being moved again?

This is a critical consideration in a surgeon's pre-operative explanation to the patient about the femto second laser cataract procedure. Movement after the laser portion of the procedure could easily be interpreted as completion of the surgery. Without a clear understanding of the femto second procedural process, I can easily imagine an uneasiness, maybe even agitation of a patient after relocation to the OR and continuation of the surgery. The likely thinking process in a layperson would almost certainly have been, "Something has gone wrong!".

5. What if I don't fixate perfectly?

Without a doubt, the most disconcerting and "anxiety generating" issue for me throughout the entire intra-operative period was fixating properly and holding fixation. Was I looking at the best possible fixation point (especially during the femto second laser docking)? Had I lost fixation at any a critical moment? "He asked me to 'refixate'. Does that mean that everything done while I was at the other fixation point was compromised?".

The layperson might not be as concerned as I was with this issue, but I can't help but believe that any patient, at any level of understanding would be concerned about accurate fixation. At the time of fixation instruction and any time after requesting a fixation readjustment, it is imperative for the surgeon to provide positive (and continued) reassurance. Anything less and I would have been convinced that I had compromised the procedure and its optimal results.

6. There are a number of unique visual and light phenomena during the femto second laser procedure and the surgical process (phaco emulsification, lens implantation, etc).

May be all cataract surgeons should have an actual lensectomy (femto or standard) done on themselves so they can "study" the phe-

nomena the patient may or may not describe to them during their real-time surgical experience. The value of such knowledge would allow the surgeon to advise the patient before or during the predictable effects of the surgery. I was fortunate to have a surgeon who had the femto second procedure and even though he didn't contemporaneously guide me through each and every phenomenon (I'll never forgive him!), he did identify some of the major effects of the femto second fragmentation (a "crystalizing" effect), phaco (a light diffraction effect) and the IOL implant (actual visualization of the unfolding optic and haptics). The patient (myself and surely any layperson) would both appreciate and enjoy descriptions by the surgeon of such unique phenomena. It's unrealistic to expect the surgeon to conduct a running commentary as he/she performs the procedures, but periodic explanations of some of the more dramatic effects would make a lot of points in the eyes of the patient (pun intended) for an enhanced surgeon-patient relationship.

7. Are things going ok?

Finally, of course, as in all surgical events, patients are constantly (subconsciously and consciously) asking themselves if everything is going well. I was no exception and my surgeon did his job well (technically and sensitively). Any competent and caring surgeon doing a procedure on a patient who is not beyond stage 1 anesthesia (as in most cataract surgery) will always reassure (or under any circumstances, advise) the patient at regular intervals about the progress of the procedure. Such comments provide the most encouraging and reinforcing thoughts for the patient throughout the experience.

Surgeon

My first and foremost responsibility as a surgeon during a procedure is always the welfare of my patient. Whether I'm dealing with a new technology or doing a standard procedure that I may have done thousands of times, accuracy and safety are my absolute priorities. Notwithstanding such priorities, I am also acutely aware of the need to communicate at the most appropriate level (assessed from my pre-operative discussions) with the specific patient. In some cases, besides necessary instructions (fixation, eye movement, etc), my intra-operative communications include a broad range of related information that I have concluded to be best for the specific patient. That range may go from continuing reassurances and encouragement with no technical commentary to limited commentary to some nominal technical descriptions of what is occurring and sometimes (but rarely) to detailed dialogue.

The patient in this case had an in depth knowledge of the technologies and procedure and as such, our intra-operative dialogue was at a fairly high technical level. Nonetheless, as with any patient, I remained concerned about the patient's comfort level and continued confidence in the success of his procedure. To achieve this goal, I always work (with any level of intra-operative communication) on a "need to know" basis. As technical a level as my discussion might assume, I always continue to measure my patient's questions and my responses as to how the patient will interpret the particular piece of information.

Immediate Post-Operative (Recovery) Stage

Patient

The period in the recovery room (with or without heavy sedation) after any cataract surgery is usually an uneventful, if not relaxing experience, with one exception. I immediately (as with probably every patient who goes through the experience) wanted to evaluate my vision in the operated eye. The surgeon's for warning of "not to expect anything perfect" was invaluable advice. Further reinforcement of such information from the post-op nurse (s) was also reassuring.

The other essential element in the immediate post-operative recovery period and care is to assume that you will not remember 90% of what you are told (from the nurses or doctor) about what to do next, what to expect over the next 24 hours and for sure, what medications, frequencies and dosages to start taking that day. Two things are paramount at this juncture: 1) having a reliable driver/companion to shepherd you through the next 12 to 24 hours and 2) getting everything (instructions, medication regimes, follow-up scheduling, etc) in writing.

Surgeon

At this immediate post-operative stage of the process, I like to see myself less as the attending surgeon and more as the "good will ambassador" to the patient. That role is best fulfilled by me making a brief visit to the recovery room to visit and "touch" the patient (handshake, shoulder tap, arm squeeze, etc) and provide a simple, "Everything went well" or, if necessary, a very brief explanation of any departures from the norm which may have occurred. Regarding the later, it's best to minimize discussion during this encounter and mention that "we'll talk more tomorrow".

In any case, it is important to ask the patient (or their companion) if they have any immediate questions. Again, any extended answers or discussion should be postponed to the follow-up visit. I believe that the patient more than understands such a postponement and in fact, prefers it.

This post-op, recovery room visit I describe is not always possible due to the numerous variables that can occur from moment to moment in a busy surgery center as well as busy surgical schedules and having to prepare for the next patient. In any case, the best time for the surgeon and patient to enjoy a discussion and positive outcomes is the one-day post-op office visit. This is the moment the patient exclaims their pleasure and joy and the surgeon "silently" thanks his OR team.

Summary

The new femto second laser cataract surgery procedure offers cataract surgeons an opportunity to increase surgical accuracy and safety. It also provides a unique opportunity to appreciate a better understanding of the patient's "thought process" throughout all stages of the cataract procedure and an analysis of those patient perspectives relative to the surgeon's concurrent thoughts and priorities.

This preplanned real-time analysis of an experienced cataract surgeon's perspective versus his surgical patient's pre, peri, intra and post-operative perspectives suggest multiple similarities in thinking as well as some disparate and varying thoughts relative to respective priorities. Such an analysis may help the surgeon reader to consider certain patient perspectives and introduce patient oriented adjustments where indicated to their approach to femto second laser cataract surgery.

It was mentioned in the introduction of this paper that the essence of the discussion was to analyze the real-time concurrent "thought process" of patient and surgeon during a routine femto second laser cataract procedure and not to measure surgical outcomes from such an analysis (for the record, the outcome in the case presented did prove to be excellent). Subsequent studies will be valuable to measure outcome relationships relative to pre-planned "thinking" algorithms for the surgeon and the patient.

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