

## Prolonged Exposure Therapy Following Awareness Under Anesthesia: A Case Study

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*Awareness during surgery is estimated to affect between 40,000 to 140,000 patients per year in the United States, and there is a growing literature suggesting that this event can lead to the development of posttraumatic stress disorder (PTSD). The current article describes treatment implemented from a manualized protocol of a woman diagnosed with PTSD following awareness during a routine surgery. Prolonged exposure therapy was delivered to the client over 12 sessions. Treatment consisted of psychoeducation, imaginal exposure, in-vivo exposure, breathing retraining, progressive muscle relaxation, and homework assignments. At treatment completion and at follow-up 10 weeks after completion of therapy, the client no longer met criteria for PTSD. Prolonged exposure therapy for PTSD is an effective treatment that alleviates symptoms of PTSD from awareness during surgery.*

FAILURE of general anesthesia to render a patient insensate (i.e., awareness) is estimated to affect between 40,000 to 140,000 patients in the United States yearly (Osterman, Hopper, Heran, Keane, & van der Kolk, 2001). Individuals who awake during surgery report a variety of experiences, including hearing sounds and voices, feeling touch, pain, paralysis, helplessness, anxiety, fear, and severe panic (Schwender et al., 1998). Many people who experience awareness during surgery report continued distress years after surgery (Lenmarken, Bildfors, Enlund, Samuelsson, & Sandin, 2002), including the re-occurrence of pain symptoms associated with the surgery (Salomons, Osterman, Gagliese, & Katz, 2004). However, only a small number of studies have assessed symptoms of posttraumatic stress disorder (PTSD) after awareness. The studies that have assessed such symptoms report that a significant portion of individuals experience symptoms of PTSD: Osterman et al. (2001) reported that 9 out of 16 individuals (56.3%) who were aware during surgery (conducted on average 18 years prior to the assessment; range 1–38 years) met criteria for PTSD. In comparison, zero controls met criteria for PTSD. Leslie, Chan, Myles, Forbes, and McCulloch (2010) found that 7 out of 13 individuals (71%) met criteria for PTSD after awareness, whereas 3 out of 25 (12%) matched controls

(who had surgery but not awareness) fulfilled criteria for PTSD. In these individuals, the median onset of symptoms was 14 days after surgery, and the median duration of symptoms was 4.7 years.

Given that awareness during surgery can lead to significant mental distress, it is necessary to explore treatments that may alleviate such suffering. The most strongly supported treatments for PTSD are cognitive behavioral therapies (CBT) such as cognitive processing therapy (CPT; Resick & Schnicke, 1992) and prolonged exposure therapy (PET; e.g., Foa et al., 2005). However, some researchers have specifically recommended the use of eye-movement desensitization reprocessing (EMDR) or hypnosis for PTSD resulting from awareness during surgery (Bruchas, Kent, Wilson, & Domino, 2011; Lenmarken & Sydsjo, 2007). A growing literature suggests the effective component in EMDR is exposure (Lilienfeld, 2008; Steketee & Goldstein, 1994), making the recommendation of EMDR in particular of unclear value. More generally, we find no compelling reason to believe that PTSD resulting from awareness during surgery requires a different modality of treatment than PTSD more generally. To date, no specific evidence has been presented regarding the use of standard, manualized treatment for this specific trauma.

Nixon, Bryant, and Moulds (2006) were the first to publish a report on the treatment of PTSD produced by awareness under anesthesia. These authors delivered eight sessions of CBT that consisted of exposure and cognitive restructuring (i.e., using CBT principles but no specific manual). At follow-up the client no longer met criteria for PTSD. Similarly, Mashour, Wang, Esaki, and Naughton (2008) reported use of systematic

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*Keywords:* awareness under anesthesia; post-traumatic stress disorder; prolonged exposure therapy

1077-7229/11/74-80\$1.00/0

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desensitization over the course of 7 months. In this treatment the patient completed in-vivo exposures in an operating room with anesthesiologists. At the end of treatment the psychologist reported that the patient no longer had PTSD. Though these initial results are encouraging, neither of the available case studies focuses on a well-established, manualized protocol. Demonstrating that this particular form of PTSD can be successfully treated using an established manual would be useful because that manual could then be used in future treatment, as well as research regarding this specific traumatic event. Furthermore, although there are appealing aspects to including in-vivo exposures in operating rooms, doing so would typically be expensive or impossible. Ideally, such treatment could also take place without special access to operating rooms. Our goals in the current study were to provide an example of a feasible treatment for PTSD from awareness using a manualized protocol that clinicians may use to treat similar clients. Further, we hope to illustrate some of the unique challenges that a clinician may encounter during such treatment and how the use of flexibility within the bounds of the evidence-based protocol may enhance treatment.

Current conceptualizations of the treatment of PTSD suggest that PET is an effective treatment of PTSD in many trauma populations (Foa et al., 2005). PET is based on emotional processing theory and works under the assumption that to recover from PTSD one must process the emotional memories connected to the traumatic event. However, PET has *not* explicitly been tested within a population presenting with PTSD from awareness during surgery. In the current study, we tested the use of PET using the manual *Treatments that Work: Prolonged Exposure Therapy for PTSD* (Foa, Hembree, & Rothbaum, 2007) with a woman who developed PTSD after awareness during a routine surgery.

### The Case

The client was a 54-year-old Caucasian woman who sought treatment 1 month after a routine, outpatient surgery on her uterus. The client had undergone the same procedure in the past with no complications. The client reported no history of psychotherapy, receipt of diagnosis of mental disorders, and no use of psychotropic medications immediately prior to or during treatment, but did have a series of prior traumatic events (e.g., death of close relative, car accident). The client reported waking up in the middle of surgery with the ability to hear and process events around her. However, she was unable to gain the attention of the physicians surrounding her. The client described hearing conversations (e.g., the gynecologist talking to the anesthesiologist) and music playing during the surgery. The client had local anesthesia on her uterus and thus did not feel significant pain. However, the

client reported feeling pressure as devices were inserted inside her and fearing that she would begin to feel pain at any moment. She reported trying to capture the surgeons' attention by calling out, moving her hands and feet, and opening her eyes. However, the client was unable to move, open her eyes, or call out. The client reported feeling extreme terror at her inability to move or gain the surgeons' attentions and fear that something would go wrong during the surgery (since she believed she was not supposed to be awake). The client alternated between trying to gain the attention of the surgeons by trying to move her limbs and trying to calm herself by concentrating on their voices and the music. The client described the experience such that her mind was trapped inside a paralyzed, useless body. In the client's words it was as though she were "stuck in a horror movie."

### PTSD Symptoms

The client sought treatment for a variety of symptoms characteristic of PTSD as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000), including avoiding talking about the event, feeling detached from others, feeling numb, having difficulty sleeping and concentrating, and being hypervigilant. Most noteworthy, the client was having extreme difficulty sleeping because (a) she was afraid of falling asleep because it reminded her of falling asleep under anesthesia before the surgery and (b) she was experiencing frequent nightmares in which she reexperienced awaking during surgery. The client was extremely hypervigilant, such that calling her name in the waiting room caused her to startle. The lack of sleep combined with hypervigilance had begun impairing her productivity at work and the quality of her social relationships. The client was avoiding any person or place that reminded her of the surgery because of the fear that the memory caused her, including avoiding her friend who had driven her to the surgery, as well as her physician calling to follow up.

### Assessment

*Mini International Neuropsychiatric Interview* (MINI; Sheehan et al., 1998–2006)

The MINI is a semistructured interview for diagnoses of Axis I disorders. At intake, the client met criteria for PTSD and no other Axis I disorder.

*Beck Depression Inventory II* (BDI-2; Beck, Steer, & Brown, 1996)

The BDI-2 is a 21-item self-report instrument that measures depression. Each symptom is rated for severity based on endorsement of one of a series of statements arranged in order from least to most symptomatic. Potential scores range from 0–63 (0–13 minimal depression, 14–19

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