

Hypnosis as Sole Anesthesia for Major Surgeries: Historical & Contemporary Perspectives

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Abstract

Hypnosis is a well validated treatment for acute and chronic pain (Montgomery, DuHamel, & Redd, 2000). It has been found capable of reducing inflammation, altering blood flow, and producing beneficial effects when hypnotic suggestions are provided during and prior to surgery (Frederick, 2001) and other painful medical procedures. This paper quotes extensively from historical examples of the use of hypnosis (mesmerism) as the sole anesthesia for major surgeries in the 1800's. These historic examples by themselves provide powerful documentation of the ability of the mind to influence the body, but they are then followed by a review of contemporary literature and controlled research on the use in hypnosis in relation to surgery and prior to medical procedures.

Keywords: Hypnoanesthesia, hypnosis, mesmerism, anesthesia, pain.

Introduction

Modern clinical and experimentally controlled research (Montgomery, DuHamel, & Redd, 2000; Hammond, 2007) has documented that hypnosis meets American Psychological Association Clinical Psychology Division criteria (Chambless et al., 1998; Chambless & Hollon, 1998) for being an efficacious and specific treatment for pain, showing superiority to pill and psychological placebos, as well as other treatments (Stern et al., 1977). These, however, simply provide controlled evidence of what has been known clinically for approximately 200 hundred years. By the late 1700's and early 1800's, an earlier form of hypnosis, mesmerism, began being used to provide relief from pain.

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Reports of the use of hypnosis for childbirth and tooth extractions were made by numerous individuals prior to 1900 (e.g., Bramwell, 1909; Delboeuf & Fraipont, 1890-91; West, 1836). By 1829, Cloquet (Elliotson, 1843) used mesmerism as the sole anesthesia in a 64-year-old woman with advanced cancer of the right breast. The 10-12 minute surgery involved two “immense” incisions to remove the tumor and for dissection and ablation of the enlarged glands of the arm. During the course of surgery, “the patient conversed calmly with the operator, and gave not the least sign of sensibility; no movement occurred in the limbs or features, no change in the respiration or voice, no emotion even in the pulse was discernible... There was no necessity to restrain her, we had only to support her” (p. 48). The woman remained continuously in a mesmeric state for two days, and afterwards “seemed to have no idea, no conception of what had passed” (p. 48). By the 1840’s, there began to be numerous reports of the use of mesmerism as sole anesthesia for both minor and major surgeries, including leg and breast amputations (Deleuze, 1846; Lafontaine, 1866). In fact, Sandby (1848) catalogued 312 painless surgeries performed with mesmerism during the 6 year period from 1841-1847, a number that Gauld (1992) considers an underestimate.

Such surgeries were particularly remarkable because they were occurring before or just as chemical anesthesia (ether, chloroform) was being introduced. This was a time when if you required surgery you would be tied down and given something to bite on. In addition, surgical mortality during this time period was commonly 40-50% (Podmore, 1909) because antiseptic methods did not begin to be used until after the discovery of bacteria by Lister in 1866. However, Esdaile (1850) reported only a 5% mortality rate in a series of 161 surgeries for the removal of scrotal tumors, and he believed that there was less blood loss. It is now believed that the lower mortality rate may be because the production of hypnotic anesthesia appears to reduce inflammation and facilitate healing as was demonstrated through facilitating hypnotic anesthesia after producing burns on the arm with a hot poker (Chapman, Goodell, & Wolff, 1959a,b)—experiments which replicated cases where this was done by Delboeuf (1887) and by one of his colleagues (Hadfield, 1917).

Because many contemporary hypnosis practitioners have only casual awareness of this historic work, the remainder of this paper will summarize background information about the two most renowned individuals who used hypnosis for surgical anesthesia—John Elliotson and James Esdaile. Some detailed descriptions are then provided to illustrate both their technique and some of their dramatic cases. The final section of this paper will review more contemporary applications of hypnosis to surgery.

James Esdaile

A Scottish physician, James Esdaile (1808-1859) began practicing medicine in the early 1830’s in India. Apparently after reading about mesmerism, Esdaile began experimenting with it and in 1845 began using it as a method of producing surgical anesthesia. By 1851 he had performed several thousand operations using mesmerism as sole anesthetic, 300 of them being major surgeries. Esdaile had assistants perform mesmeric passes over the patient until he determined, from periodic checks, that the patient was nonresponsive to pin pricks or appeared somnambulistic, and then the patient was taken into surgery. His technique, which will be described in his own words below, consisted of mesmeric passes in a darkened room, followed later by verbal suggestions for sleep (Edmonston, 1986). Esdaile (1846, 1852) published fascinating accounts concerning his experiences, and by 1851 had returned to the British Isles. Esdaile readily admitted that not all patients were sufficiently responsive to mesmerism to permit painless surgery, and he noted in one series that 3 out of 17 (17%) of

patients who had been induced into a trance for surgery realerted before the completion of surgery. Elliotson (1848-1849) noted that in 49 consecutive surgeries done by Esdaile, 17 (34.7%) occurred "with the patient like a corpse," in 14 cases there was "no difference from the appearance of a corpse except slight contractions of brow, fingers, or toes," while 13 cases showed "considerable indications of suffering, but subsequent denial of it," and 5 patients awakened during surgery. By this account it may be estimated that probably 60% of the surgical patients experienced minimal or no pain, although we must remember that there may have been some patients who did not enter a mesmeric state sufficient to allow surgery to begin.

By the time of his return to Scotland, in response to medical opposition, mesmeric hospitals had come into existence and were treating such conditions as headaches, loss of voice, tic douloureux, rheumatism, facial inflammation, hysteria, wry neck, strumous ophthalmia with ulcers of the cornea, and St. Vitus dance (Rosen, 1959).

Esdaile (1846) explained his criteria and procedure in these words:

I beg to state, that I have seen no bad consequences whatever ensue from persons being operated on in the Mesmeric trance. Cases have occurred in which no pain was felt, even subsequent to the operation, and the wounds healed by the first intention; and in the rest I have seen no indication of any injurious consequences to the constitution. On the contrary, it appears to me to have been saved, and that less constitutional disturbance has followed than under ordinary circumstances.

In my early operations, I availed myself of the first fit of insensibility, not knowing whether I could command it back at pleasure; and when the coma is deep enough on the first occasion, it is probably best for the patient that it should be taken advantage of, as the fewer liberties we take with nature the better, the rule being never to do more than enough. But if the trance is not profound the first time, the surgeon may safely calculate on its being so the next, and, when operating in public, it is prudent to take the precaution of a preliminary trance or two. I have already said, that flexibility of the limbs, till moved, and their remaining rigid in any position we leave them in, is characteristic of the trance; but there are exceptions, and these are equally diagnostic and to be depended upon. It sometimes happens that the limbs become rigid as they lie, and, on bending them, they are not passive and plastic, as in the first kind of catalepsy, but the muscles always tend towards a spasmodic extension of the limbs: at other times, there is a complete relaxation of the whole muscular system, and the arms and legs can be tossed about without resistance, like those of a person just dead. The eyes are usually closed, but the eyelids are sometimes seen a little separated, or half open and tremulous; and the eye is even seen wide open, fixed, and the pupil dilated. On one occasion, having ordered a man to be entranced, I returned in 2 hours, and was told by my assistant that he was not affected: I sent to see, and found him with half open eyes, quivering eye-lids, and trembling hands. I immediately said the man was ready, and, without testing his condition farther, performed on him a tedious, but painless, operation. (pp. 244-246).

Removal of Scrotal Tumors

Esdaile encountered a large number of scrotal tumors in India that were associated with filariasis transmitted by mosquitoes (Gauld, 1992). The largest such tumor that he removed weighed 112 pounds! One of his case descriptions (Esdaile, 1846) follows:

Gooroochuan Shah, a shopkeeper, age 40. He has got a “monster tumor,” which prevents him from moving; its great weight, and his having used it for a writing-desk for many years, has pressed it into its present shape. His pulse is weak, and his feet oedematous, which will make it very hazardous to attempt its removal; but with such an appendage, life is literally a burthen [burden]. He became insensible on the fourth day of mesmerizing, and was drawn with the mattress to the end of the bed (my usual mode of proceeding): two men then held up the tumor in a sheet, pulling it forward at the same time, and in the presence of Mr. Bennett, I removed it by a circular incision, expedition being his only safety. The rush of venous blood was great, but fortunately soon arrested; and after tying the last vessel, the mattress was again pulled back upon the bed with him upon it, and at this moment he awoke. The loss of blood had been so great that he immediately fell into a fainting state, and it took a good while to remove him. On recovering he said that he awoke while the mattress was being pulled back, and that nothing had disturbed him. The tumour weighed 80 pounds, and is probably the largest ever removed from the human body. I think it’s extremely likely that if the circulation had been hurried by pain and struggling, or if the shock to the system had been increased by bodily or mental anguish, the man would have bled to death, or never have rallied from the effects of the operation. But the sudden loss of blood was all he had to contend against; and, though in so weak a condition, he has surmounted this, and gone on very well (pp. 240-241).

In another scrotal tumor case involving a 60 year old man, Esdaile (1846) described having an assistant (a cook in the hospital) spend a half an hour to make the man “insensible.” Following the painless surgery, the man demonstrated complete amnesia for the procedure. Here is part of Esdaile’s account:

Considering the man’s age and the size of the tumour, we did not think it worth while to attempt to save the testes, and the operation was therefore speedily done. The man never moved, and did not awaken until after the last artery was tied. Seeing him about to awake, he was covered up, and asked if he had been in any way disturbed; he said, ‘No.’ He then desired to sit up, and show me the tumour, as I wished to examine it; he did so, and actually put his hands under it to raise the mass as usual; his look of amazement, on missing it, was something not to be easily forgotten (pp. 239-240).

Testicular and Hernia Surgery

Here is yet another of Esdaile’s (1846) fascinating descriptions:

Mahes Banergie, a Brahmin, age 40, has an enlarged testis, the size of a child’s head; it is red, glistening, and very painful, and there is a scrotal hernia above it. He was entranced on the first trial, and I returned the gut into the abdomen, handling the inflamed part very rudely, without

his showing the least sensibility. I then, in the presence of Captain D. L. Richardson, dissected out the diseased organ. The operation was tedious, as I had to carefully separate the mass from the hernial sack. He moved, as in an uneasy dream, but did not awake till we were tying the arteries, which were very numerous; he then said that he had felt nothing until that moment. The muscular movements, sometimes seen, looked more like the contractions induced by cutting a recently dead animal, than the common contortions from pain; and I believe may be avoided by patience, as every trance seems to deepen the insensibility (pp. 219).

As indicated earlier, Esdaile readily admitted that he was not successful in inducing trance in some patients. Today, clinicians often estimate that perhaps only 10% of patients may demonstrate sufficiently high hypnotic responsiveness to permit hypnosis to be used as sole anesthesia for surgery. We must remember, however, that in the days of Esdaile and Elliotson the motivation of patients was very high because of the absence of chemical anesthesia. It also appears that one of the factors in his success with using mesmerism for surgery was a lack of informed consent (although it appears that after initial successes, patients were referring their friends to him for surgery). This may account for the estimate made earlier that perhaps as high as 60% of patients experienced minimal or no pain in surgery. Here is Esdaile's (1846) explanation of his typical technique:

The routine followed is this. A person presents himself before me for the first time, and I see he has a disease requiring an operation for its removal: he is desired to go into another room (which is dark), and repose himself after his journey, not a word being said about an operation, as this would cause a mental excitement, destructive to the mesmeric influence. One of my assistants follows him; seats himself (if unperceived, so much the better) at the head of the bed; and by using the process to be hereafter described, often reduces the patient to a state of coma by the end of the visit; I then do what is necessary, whether it be to take off, or straighten a limb, without his knowledge or consent (p. 74).

He described a case, for example, of a woman who had a tumor on her calf for 9 years which was full of deep ulcerations and maggots. "After much trouble, first by one person, and then another, she was entranced, and I cut out the tumor" (p. 75-76). This procedure was done painlessly. However, 4 months later the tumor had returned. For 3 days, unsuccessful efforts were made to mesmerize her for 2 hours a day for three consecutive days. They finally operated as they would traditionally and "the poor old woman screamed miserably the whole time, crying, that I was murdering her; and she continued in the greatest pain for hours afterwards" (p. 76).

For those individuals unfamiliar with the historic technique of mesmerism, a brief description of the technique that Esdaile (1846) used will prove instructive:

Desire the patient to lie down and compose himself to sleep, taking care, if you wish to operate, that he does not know your intention; this object may be gained by saying it is only a trial; for fear and expectation are destructive to the physical impression required. Bring the crown of the patient's head to the end of the bed, and seat yourself so as to be able to bring your face into contact with his, and extend your hands to the pit of

the stomach, when it is wished; make the room dark, enjoin quiet, and then shutting your patient's eyes, begin to pass both your hands, in the shape of claws, slowly, within an inch of the surface, from the back of the head to the pit of the stomach; dwelling for several minutes over the eyes, nose, and mouth, and then passing down each side of the neck, go downwards to the pit of the stomach, keeping your hands suspended there for some time. Repeat this process steadily for a quarter of an hour, breathing gently on the head and eyes all the time. The longitudinal passes may then be advantageously terminated, by placing both hands gently, but firmly, on the pit of the stomach and the sides.

It is better not to test the patient's condition by speaking to him, but by gently trying if the cataleptic tendency exists in the arms. If the arms remain fixed in any position they are left in, and require some force to move them out of every new position, the process has been successful; the patient may soon after be called upon by name, and pricked, and if he does not awake, the operation may be proceeded with. It is impossible to say to what precise extent the insensibility will befriend us; the trance is sometimes completely broken by the knife, but it can occasionally be reproduced by continuing the process, and then the sleeper remembers nothing; he has only been disturbed by a night-mare, of which on waking he retains no recollection (pp. 145-146).

Gauld (1992) noted that Esdaile delegated a great deal of the physically tiring procedure of mesmerism. "He would, if necessary, have a patient magnetized for hours each day for 10 or 12 days by native assistants, saving his own strength for the performance of surgery" (p. 221). Esdaile (1846) also described his technique of "topical mesmerising," where he indicated that he suspended "the ends of the fingers over the pained part, breathing on it at the same time, and then drawing the fingers downwards, continued for a long enough time, say an hour or two—is often very effectual in soothing local pain; and I have seen it relieve the pain in gout, bruises, and rheumatism" (p. 156).

John Elliotson

John Elliotson was an innovative physician who tended to threaten and anger the medical establishment by his advocacy of hypnosis. But even before he used mesmerism, he became controversial through challenging existing teaching practices in medicine and by being one of the supporters of a new institution, the New University College, and later becoming the first professor of medicine at the University College Hospital (Kroger, 1977) where medical students learned at the bedside instead of in apprenticeships to private doctors.

Elliotson was a pioneer in many ways, including being recognized as one of the first physicians to begin using the stethoscope, and as the one who made discoveries in the use of a variety of drugs such as quinine, iron, and iodide of potassium (Bramwell, 1903; Edmonston, 1986). He was also clearly innovative in his openness to utilizing mesmerism in his work, including as an anesthetic for minor and major surgeries and obstetrical anesthesia. However, instead of being received with enthusiasm he experienced considerable hostility from medical leaders. Elliotson and D. Thomas Wakley, founding editor of the new British medical journal, *Lancet*, carried on a vociferous feud for years. Nevertheless, Elliotson

enjoyed public popularity and the British writers William Thackeray and Charles Dickens were counted among his friends.

Elliotson published the results of 76 surgeries where mesmerism was the sole anesthetic (Elliotson, 1843)—a great humanitarian advancement in an age of surgery without anesthesia. It was not until 1846 that ether was discovered, and 1847 before chloroform was introduced—developments which would soon minimize the need for hypnoanesthesia in surgery. In 1843, Elliotson established a journal, *The Zoist*, after the British medical journal *Lancet* refused to publish his experiments and work on mesmerism. Apart from his work with surgery readers may find it interesting that in the last issue in 1848, Elliotson described perhaps the first known application of hypnosis with cancer (not just for pain or surgery), predating the more recent work in this area by approximately 130 years. The middle-aged woman was diagnosed by several prominent physicians as having breast cancer, which was felt by some of them to be inoperable. She was a deep trance subject and Elliotson used mesmerism with her up to three times a day. Furthermore, rather like the prolonged hypnosis of Wetterstrand (1897), Kuriyama (1968), Kratochvil (1970), Kleinhauz (1991), and the deep meditative hypnotic approach of Ainslie Meares (1979; 1983) and of this author, she seems to have remained in deep trance for hours at a time (Elliotson, 1848). She steadily progressed, gained weight and strength, her skin healed, and the tumor decreased in size. Curiously, when Elliotson traveled out of the country, the patient lost ground, but she continued to improve once he returned. He continued to use mesmerism with her for over 5 years with no sign of the return of the cancer in follow-up examinations by several physicians. When she died soon after of inflammation of the lungs, autopsy found no trace of cancer.

Examples of Surgery by John Elliotson

Leg Amputation. Elliotson (1843) described the case of a 42 year old man (treated by W. Topham, whom Elliotson repeatedly quotes). This case will be quoted at length from Elliotson's book, just as it appeared in the original text:

He had suffered for nearly five years from neglected disease of the left knee, the inferior of the joint of which was found after the amputation deeply and extensively ulcerated. "*The slightest motion of the joint was attended by the most excruciating agony; his nights were almost wholly sleepless, in consequence of the painful startings of the limb; his pulse was weak and rapid; his face constantly marked with a hectic flush; his tongue foul; appetite gone.*" When seen "he was sitting upright upon a bed in the hospital; *the only position which he could bear;* he complained of great pain from his knee and of *much excitability* and loss of strength, from his constant restlessness and deprivation of sleep, *for he had not, during the three previous weeks slept more than 2 hours in SEVENTY*"

On this day he was first mesmerised by Mr. Topham and for 5 and 30 minutes. "The only effect produced was a closing of the eyelids, with that quivering appearance which so commonly results from the process; and, though awake and speaking, he could not raise them until after a lapse of a minute and a half."

On the 10th, he was sent to sleep in 20 minutes. On the 11th, "he was suffering *great agony, and distressed even to tears.*" Mr. Topham

“commenced by making passes longitudinally, over the diseased knee; in 5 minutes he was comparatively easy; and, on proceeding further to mesmerise him, at the expiration of 10 minutes more he was *sleeping like an infant*. Not only his arms were then *violently pinched*, but also *the diseased leg itself*, without exhibiting *any sensation*; yet his limb was so sensitive to pain, in his natural state, he *could not bear even the LIGHTEST covering* to rest upon it. *That night he slept SEVEN hours WITHOUT INTERRUPTION.*”

“After constantly mesmerising him for 10 or 12 days, a great change was observed in his appearance. *The hue of health returned; he became cheerful, felt much stronger; was easier both in mind and body; slept well, and recovered his appetite.*” So great was the change, that Mr. Ward, after having been absent from indisposition, “was as much *astonished*, on his return on the 27th of September, about three weeks after the commencement of the mesmerism,” as he “was *delighted* to observe the *improved condition* of the man;” and, had he “not known the previous history of the case, *much doubt must have arisen in his mind, as to the propriety of immediately amputating the limb.*”

“On the 22nd of September, the patient was first apprised of the necessity of an early amputation. The communication seemed almost unexpected, and *affected him considerably*, and *destroyed his natural sleep that night.*” The next day he was still “fretting and restless, and in consequent pain.” Yet he was put to sleep mesmerically in 4 minutes and a half. Like many other susceptible patients, he could now be affected locally when in his natural state, without coma. For example, passes without contact along his extended extremities would render them so rigid as not to be bent by mechanical force short of danger, though breathing upon them constantly caused them to relax and drop to his sides.

Although in this mesmeric coma the sensibility to mechanical causes of pain was so far lessened that violent pinching, and sudden pricking, and of even the diseased limb, produced no evidence of sensation, and he lost all pain in his knee while this was in perfect rest, the exquisitely sensitive interior of the diseased joint was not proof against the torture of motion, which, however slight, agonized and awoke him. In many cases, I have seen excruciating internal pain of nerves, inflamed or otherwise under disease, give evidence of its fierce shootings by the sudden agitation of the frame, expression of the countenance, and catching of the breath, when there was not sensibility enough for sensation from pinching, pricking, cutting, tearing, or even burning; the excruciating internal pain not awakening them unless when at the very highest intensity, or when the coma was not at the greatest depth. When there is exquisite tenderness of a part, as in the knee-joint of this poor man, the coma must indeed be profound,—more profound than it seems ever to have been in this case, except perhaps when the precaution was taken of keeping the fingers on the eyes after the operation was begun,—for motion of the part not to cause anguish.

At the time of the operation, the 1st of October, it was found *impossible, without such torture as aroused him from his mesmeric coma, to remove him from his bed to the table.* Instead, his coma was not so deep, but it *was dissipated by attempting to converse with him*; and in general, it ceased spontaneously in half an hour, his waking being “slow and gradual and without the least start.” Instead of being placed upon a table, he was therefore lifted with his low bed upon a temporary platform, and “he was soon put into the mesmeric sleep, *although he was considerably excited by hearing the cries of another patient upon whom Mr. Ward was performing a tedious and painful operation.*” He was then “drawn by means of the bed clothes beneath him towards the end of the bed.” Even this movement excited the pain and awoke him. But the pain soon ceased, and, his limb being “raised about two inches from the mattress” by a surgeon present (Mr. Wood), who “rested the heel upon his shoulder and supported the joint with his hand,” he was mesmerized into coma again in 4 minutes. Mr. Topham continued to mesmerize him for 15 minutes, and then informed Mr. Ward that the operation might be begun, and “*brought two fingers of each hand gently in contact with the patient’s closed eyelids; and there kept them, still further to deepen the sleep. . . .*”

The operation now commenced. “Mr. Ward, after one earnest look at the man,” in the words of Mr. Topham, “slowly plunged his knife into the center of the outside of the thigh, directly to the bone, and then made a clear incision round the bone, to the opposite point on the inside of the thigh. The stillness at this moment was something awful; the *calm* respiration of the sleeping man alone was heard, for all other seemed suspended. In making the second incision, the position of the leg was found more inconvenient than it appeared to be;” and Mr. Ward, to use his own words, “having made the anterior flap,” “was under the necessity of completing the posterior one in three stages. First by *dividing a portion of the flap on the inside*; then a *similar portion on the outside*. This proceeding, which was of course far more tedious and painful than the ordinary one, was necessary to enable me to *pass the knife through under the bone and thus complete the whole*, as I could not sufficiently depress the handle to do so, without the two lateral cuts.” Yet, notwithstanding all this, the patient’s “sleep continued as profound as ever. *The placid look of his countenance never changed for an instant*; his whole frame rested, *uncontrolled, in perfect stillness* and repose; *not a muscle was seen to twitch*. To the end of the operation, including the sawing of the bone, securing the arteries, and applying the bandages, occupying a period of upwards of 20 minutes, he *lay like a statue.*”

Soon *after* the *second* incision, “a low moaning” was heard at intervals until the conclusion of the operation, that is, after the leg was off and while the arteries were tying and the bandages putting on, giving “to all present the impression of a disturbed dream.” That it arose from troubled dreaming I have no doubt; for in the mesmeric coma it is common for patients, *after*

the lapse of a certain time, to dream and talk, and especially of any thing which has just before strongly impressed them; and this patient was very likely, and from my experience I should say, was almost certain, to dream of having soon to undergo the operation, the thoughts of which had so acutely distressed him and must have occupied his mind to the last moment of his waking state. I have at this moment three patients who in the coma always dream and talk of something which has very recently, generally the same day, interested them, or of something they expect on the same day. Had it arisen from the operation, it would have occurred during the most painful periods; would have occurred, as it did not, exactly and only at moment of the proceeding most likely to be painful, whereas it occurred as much at moments when nothing was doing to give pain. The man could not have moaned from pain in spite of himself at moments when there was nothing to make him moan in spite of himself. It would have been increased, and indeed changed to a sudden and louder noise, whenever the end of the sciatic nerve was roughly treated. For, still farther to test his insensibility, Mr. Ward “twice touched” and, as he informs me, *pretty roughly and with the points of the forceps*, so that he in fact pricked, “*the divided end of the sciatic nerve*, without any increase of the low moaning.” The pain which such an experiment would occasion to a person in his ordinary state must be equal to a strong dart of *tic douloureux*; and I defy any human being, in his ordinary condition, to be subjected to such an experiment without, not to say an increase of low moaning if he was already moaning, but without suddenly giving some other more decided sign of anguish,—without some interruption to the “perfect stillness and repose of a statue.” Mr. Ward further informs me that he “once put his thumb roughly upon the nerve in taking the posterior flap in his hand to sponge, and also used the sponge very roughly.” If the man had not been able to bear the pain of the operation without moaning, he would not have been able to retain the *perfect placidity* of his countenance, the *relaxed and motionless* state of his lips and hands, and the undisturbed regularity of his breathing. (pp. 3-6)

Following the amputation, the patient “*gradually and calmly*,” awakened and was given water and “sal volatile” to drink. At first, he uttered no exclamation; and for some moments seemed lost and bewildered,—“a characteristic and striking phenomenon so familiar to the mesmerists when any visible change in external circumstances has occurred while the patient was asleep.” But, after looking around, he exclaimed, “I bless the Lord to find it’s all over.”

“He was then removed to another room; and, immediately,” Mr. Topham “asked him in the presence of all assembled to describe all he felt or knew after he was mesmerised. His reply was ‘*I never knew anything more; and never felt any pain at all; I, once, felt as if I heard a kind of crunching.*’” Mr. Topham “asked if that were painful? He replied, ‘*No pain at all; I never had any; and knew nothing till I was awakened by that strong stuff*’ (the sal volatile).” Of course the moment he became sensible he must have tasted the sal volatile, and would fancy that it awoke him, and he must have continued to taste it for some time after he was awake. When mesmeric patients awake spontaneously, they continually ascribe their awakening to their first sensation, or even to something imagined.

“The crunching no doubt was the sawing his own thigh bone.” It is not uncommon for

patients in the mesmeric coma, although insensible to mechanical causes of irritation, yet to hear more or less. . . . In some cases patients hear not the loudest sounds; in others, they hear and answer questions; and it is very common for them to hear well at one moment and appear perfectly deaf at another, as the mesmeric conditions fluctuate in intensity; and the state of sensibility to mechanical causes of irritation and of hearing may bear no relation to each other..

“He was left easy and comfortable; and still found so at nine o’clock that night; about which time” Mr. Topham “again mesmerised him (in a minute and three quarters) and he slept an hour and a half.”

Two days afterwards, when he was put into the mesmeric coma, Mr. Topham proposed to Mr. Ward, who intended to dress the wound that day for the first time, to take this opportunity; and *the wound was accordingly dressed without the man’s knowledge, and therefore without the least pain.* The man has done perfectly well. Within twenty-four hours after the operation he was singing. In three weeks he sat up to dinner, “and had not a single symptom...” (pp. 6-7).

Discussion

My interest in hypnoanesthesia increased greatly more than 20 years ago when I took two patients through surgeries with hypnosis as sole anesthesia—one of them lasting 4 hours. This experience led to my exploration of some of the historical information cited in this article. Although chemical anesthesia is very reliable and advanced today, nonetheless hypnotic preparation for surgery and suggestions given to patients while under chemical anesthesia and in the recovery room have been found valuable in reducing anxiety and post-surgical pain and complications, as well as in reducing the need for as much chemical anesthesia. Hypnosis has also been used in more modern times as sole anesthesia (August, 1960, 1961; Bowen, 1973; Finer & Nysten, 1961; Frederick, 2001; Kroger & DeLee, 1957; Lait, 1961; Levitan & Harbrough, 1992; Marmer, 1959; Minalyka & Whanger, 1959; Monteiro & de Oliveira, 1958; Steinberg, 1965), and even self-hypnosis has been used as the sole anesthetic for liposuction (Botta, 1999) and cholecystectomy (Rausch, 1980).

Evidence exists, as reviewed by Brown, Schefflin and Hammond (1998; chapter 10) and Munglani and Jones (1994) that the last sense to decline under chemical anesthesia is the ability to hear, and that many patients for at least part of the time they are under anesthesia, can still process suggestions that are presented to them. Brown, Schefflin and Hammond (1998) also reviewed evidence that strongly suggests that frequently, when therapeutic suggestions are delivered while the patient is under anesthesia, there is less pain and fewer side effects experienced following surgery. It is also believed that therapeutic suggestions given in preparation for surgery not only reduce pre-surgical anxiety, but also often result in more rapid recovery with fewer side effects and less pain.

For example, Caseley-Rondi, Merikle, and Bowers (1994) carefully studied the capacity of surgical patients to hear at some level under chemical anesthesia, to unconsciously process the information heard, and despite having conscious amnesia for the information, to still be influenced by it. In an exceptionally well-designed double-blind experiment, they evaluated a total of 96 adult patients who were undergoing elective surgery. These patients

were assigned randomly to four tape-recorded conditions: music only, suggestion only, suggestion plus music, and blank tapes. An important feature of the suggestions given was that patients were called by name and told at the beginning: “Mary, I am now going to put the headphones on you. Listen carefully. It is important that you listen, Mary” (p. 181). It was found that only the relevant therapeutic suggestions showed a significant effect, and there was no evidence for the recall of melodies, except to some degree when they were interspersed with relevant suggestions of a therapeutic nature. However, patients who received therapeutic suggestions (regardless of hypnotic capacity) while they were under an adequate plane of chemical anesthesia required less morphine after surgery (when measured by a very sensitive measure—amount of self-administered morphine). This demonstrated that anesthetized patients can hear at some level under anesthesia, can process information, and despite the memories being implicit and having conscious amnesia for what occurred, patients can still be influenced by what they experienced. Furthermore, it was ascertained by Caseley-Rondi et al. (1994) that patients with high hypnotic capacity were able to accurately discriminate whether they had received therapeutic suggestions, rather than only hearing music or a blank tape. In fact, patients with high hypnotic ability were 100% accurate in their guesses.

McLintock, Aitken, Downie, and Kenny (1990) studied 63 women undergoing elective abdominal hysterectomy. They were randomly assigned to a tape of positive suggestions or a blank tape during the surgery. Anesthesia was standardized for all of the women. Postoperative analgesia was provided through a patient-controlled analgesia system for the first 24 hours. An outcome measure, morphine consumption in the first 24 hours, was 51.0 mg in women played positive suggestions and 65.7 mg in those played a blank tape ($p = 0.028$). They concluded that intraoperative suggestions seem to be registered at some level below conscious awareness and had a positive effect in reducing patients’ morphine requirements in the early postoperative period. Although some might argue that these results may have occurred because some patients were inadequately anesthetized for the entire operation, they were nonetheless consciously amnesic for the suggestions.

Another randomized controlled study with children (Lambert, 1996) found that preoperative hypnotic guided imagery resulted in significantly less pain, state anxiety, and shorter hospital stays. Cupal and Brewer (2001) conducted a randomized, placebo controlled study on the effects of “relaxation and guided imagery” on knee strength, reinjury anxiety, and pain in ACL knee surgery patients. The guided imagery patients had significantly greater knee strength and significantly less reinjury anxiety and pain at 24 weeks post-surgery than either attentional placebo or control group participants.

Hypnosis was evaluated as an adjunct to conscious sedation for plastic surgery by Faymonville, Fissette, Mambourg, Roediger, Joris, and Lamy (1995). They studied 337 patients undergoing minor and major plastic surgery under local anesthesia and conscious intravenous sedation. They were divided into three groups: intravenous sedation ($n = 137$) using only midazolam and alfentanil; hypnosis ($n = 172$), during which relaxation age regression were used; and relaxation ($n = 28$), consisting of patients where a hypnotic induction was performed, but without much depth. In all three groups, midazolam and alfentanil were titrated to achieve patient immobility, in response to patient complaints, and to maintain hemodynamic stability. Intraoperative anxiety in the hypnosis group and in the brief hypnotic relaxation group were significantly ($p < .001$) less than in the intravenous sedation group. Pain scores during surgery were significantly greater in the intravenous sedation group than in the hypnosis group ($p < .001$) and the relaxation group ($p < .01$). In addition, midazolam

requirements were significantly less in the hypnosis group ($p < .001$) and in the relaxation group ($p < .01$) compared with the sedation group. Alfentanil requirements were significantly decreased in the hypnosis group, and postoperative nausea and vomiting were reported by 1.2% of the patients in the hypnosis group, 12.8% in the relaxation group, and in 26.7% in the intravenous sedation group. Greater patient satisfaction with the anesthetic procedure and greater surgical comfort were also found in the hypnosis group.

In a later study with 60 plastic surgery patients who were randomly assigned to hypnosis or a control condition, Faymonville, Mambourg, Joris, Vrigens, Fissette, Albert, and Lamy (1997) found that hypnosis was associated with less peri- and postoperative anxiety and pain, even though there was a significant reduction in intraoperative needs for midazolam and alfentanil in the hypnosis group. The hypnosis group patients also felt a greater sense of intraoperative control than the control group, and experienced significantly less nausea and vomiting than the other patients. Hypnotized patients demonstrated fewer signs of discomfort and pain.

Hypnosis has also been used effectively in oral surgery. Dyas (2001) found that hypnosis prior to sedation (midazolam and fentanyl) resulted in a significantly ($p < .001$) lower heart rate and much less ($p < .001$) intravenous sedation that was required compared with a standard sedation procedure. Outcomes in control patients were not as positive and they required more IV medication, and one patient required conversion to a full general anesthetic. Enqvist and Fischer (1997) compared a control group to patients who used a pre-surgical self-hypnosis tape prior to surgical removal of molars. Hypnosis patients experienced significantly less anxiety and required significantly less analgesic medication. Listening to an 18 minute self-hypnosis tape (Enqvist, Konow, & Bystedt, 1996) prior to maxillofacial surgery was found to result in significantly less post-surgical edema ($p < .000$), pyrexia ($p < .006$) and use of anxiolytics ($p < .003$) postoperatively in comparison with matched controls.

Lu, Lu, and Hersh (1995) found hypnotic augmentation of standard sedation to be very beneficial in 18 drug dependent patients where previous attempts at oral surgery had proven unsuccessful because of their fears about the use of sedation. Hypnotic induction preceded use of intravenous sedation (midazolam or diazepam plus methohexital), but followed intramuscular sedation (meperidine plus promethazine). Treatment outcomes were good or excellent in 11 or 18 of these refractory patients using this integrated hypno-sedative approach. When treatment outcome was poor or fair, 5 of 7 patients were found to have the possibility of tolerance or cross-tolerance between their drug of abuse and the sedative agent, while this possibility was only found in 1 of 11 patients having good or excellent outcomes. It was concluded that hypnosis can be used to augment sedation in drug-dependent patients, but it is important to use sedatives where tolerance is unlikely. Positive outcomes from the use of hypnotic sedation in dentistry have also been reported by Moore, Brodsgaard, and Abrahamsen (2002) and by Shaw and Wellbury (1996) with tooth extractions in children.

Control of bleeding

More than 150 years ago Esdaile expressed his belief that surgery under mesmerism reduced blood loss and facilitated recovery, while conventional surgery to remove large tumors was more life threatening due to hemorrhaging. In more recent times there have been many case reports of operative and postoperative control of bleeding through hypnotic suggestions (Benson, 1971; Clawson & Swade, 1975; Crasilneck & Fogelman, 1957; Dubin & Shapiro, 1974), including reports of this saving patients from bleeding to death (Bishay, Stevens, & Lee, 1984; Fredericks, 1967). Vascular control in hypnosis was also demonstrated in a patient

with poor hand circulation due to Raynaud's disease, where hypnotic suggestion produced a 400% increase in blood volume in the fingers within 45 seconds (Conn & Mott, 1984).

In addition, there have been experimental studies of vascular control. One study (Chaves, Whilden & Roller, 1979) measured surgical and post-surgical blood loss in patients undergoing bilateral molar extractions. The reduction of bleeding from using hypnotic suggestions compared with the non-hypnotic control subjects was more than 65%. In working with hypnosis to produce blood clotting in severe hemophilia patients, hypnosis has been found to be effective compared to a control group (Swirsky-Sacchetti & Margolis, 1986). Enqvist and Fischer (1997) studied the effects of preoperative hypnosis, delivered through a 20-minute audiotape (with a relaxation induction, suggestions of a safe place, suggestions for control of bleeding, coagulation and healing, instructions concerning how dissociation may reduce pain, and suggestions for reentering this state), on patients scheduled to have molars surgically removed. A control group was used and the single surgeon was blind concerning group assignment. It was suggested that patients should listen to the tape daily during the week prior to surgery. Patients receiving hypnotic preparation for surgery experienced significantly less anxiety and required significantly less analgesic medication than the control group. It was concluded that hypnotic preparation for surgery, delivered through a carefully designed self-hypnosis audiotape, may be an effective and economic intervention. In a different study, Enqvist von Konow and Bystedt (1995) compared oral surgery patients listening to a pre-operative self-hypnosis tape with matched controls and found that hypnosis resulted in a 30% reduction in blood loss, and a 26% reduction in blood loss was found in patients who received both pre- and perioperative suggestions, while the group who only received perioperative suggestions demonstrated just a 9% reduction in blood loss. Other controlled experimental studies (McGuirk, Fitzberald, Friedmann, Oakley & Salmon, 1998; Selkowitz, Heber & Haustein, 1995; Zachariae, Oster & Bjerring, 1994) have also documented the ability of hypnosis to alter blood flow.

Control of nausea and vomiting

As many as 70% of surgical patients receiving general anesthesia experience postoperative nausea and vomiting. In a randomized, double blind study, Eberhart, Doring, Holtzrichter, Roscher and Seeling (1998) studied 100 patients undergoing thyroidectomy. Half of the patients listened to an audiotape during surgery while the other half heard a blank tape. Droperidolfentanyl-N₂O anesthesia was used, which would preserve neuropsychological functions necessary to process therapeutic suggestions during surgery. Patients receiving therapeutic suggestions experienced significantly less nausea and vomiting (47.2% vs. 85.7%) than the control group, and required less anti-emetic treatment (30.6% vs. 68.6% of the control group).

Similar positive findings were reported by Maroof, Ahmed, Khan, Bano, and Haque (1997). In a randomized, controlled study they provided intraoperatively either tape recorded suggestions or played a blank tape to 50 adult female patients undergoing elective abdominal hysterectomy. There was a significant difference ($p < .05$) between the incidence of vomiting in the control group (60%) versus the suggestion group (36%). The number of vomiting episodes in the control group per patients was 3.1 +/- 1.2 as compared to 1.7 +/- 0.6 in the therapeutic suggestion group. The patients requiring rescue antiemetic medication was significantly higher ($p < .05$) in the control group (66.6%) compared to the suggestion group (22.2%). Other control group studies (Enqvist, Bjorkllund, Engman, & Jakobsson, 1997; Williams, Hind, Sweeney & Fisher, 1994) have reported similar findings.

Modern evidence of wound healing

Earlier we noted the pioneering work of Chapman, Goodell, and Wolff (1959a,b) who in a controlled study documented that hypnotic anesthesia reduced inflammation and facilitated healing in burns. More recently Ginandes, Brooks, Sando, Jones, and Aker (2002) conducted a randomized, controlled study that evaluated the effects of hypnosis on wound healing in 18 women following reduction mammoplasty. The hypnosis group had 2 hypnosis sessions prior to surgery, and 6 weekly sessions following surgery, and were given audiotapes of each session for self-hypnosis practice. Sessions included suggestions for a reduction in inflammation and bleeding, suggestions for time distortion, and visualization of soft-tissue restoration and accelerated healing. All the women received the same surgical protocol and postoperative care, and were randomly assigned to usual care, adjunctive supportive attention, or adjunctive hypnosis. A supportive attention control group had a comparable number of sessions that provided support concerning their feelings about surgery. At 1 and 7 weeks post-surgery, photographs of the incision were assessed using a wound assessment inventory, and subjective pain ratings and perceptions of healing were obtained at 1 and 6 weeks along with functional recovery assessment at weeks 1 and 7. Nurse ratings demonstrated significantly ($p < 0.001$) greater wound healing in the hypnosis group and physician and patient ratings trended toward the hypnosis group.

Hypnotic interventions during medical procedures

Lang, Joyce, Spiegel, Hamilton and Lee (1996) evaluated the use of self-hypnosis for relaxation to reduce the need for intravenous sedation during radiological procedures. A control group of 14 patients were randomly assigned to a control group, while 16 were randomly assigned to the experimental group. Thirty of 33 patients invited to participate were willing to do so, suggesting a great public openness to alternative medicine, nonpharmacologic intervention. All patients had the capacity to administer patient-controlled analgesia. Self-hypnosis training included teaching them to use relaxation and imagery of a pleasant place for induction and deepening. If something unpleasant was experienced, patients were taught to allow an image to form representing the feeling, and then to transform the image to neutralize the emotion. When a possibly painful experience was anticipated (e.g., contrast medium injection), patients were told to imagine a competing feeling (e.g., numbness, coolness). Often only 5-10 minutes were spent with a patient during sterile prepping and administration of local anesthesia, followed by a few minutes at a later time to deepen hypnotic relaxation, prepare the patient for potentially painful stimuli, or to obtain reports (e.g., pain or anxiety scores). In comparison to controls, hypnotized patients required less drugs (0.28 vs. 2.01 drug units; $p < .01$) and experienced less pain (median rating 2 vs. 5 on a 0-10 scale; $p < .01$). Control patients significantly more often exhibited oxygen desaturation and/or required interventions for hemodynamic instability. Anxiety ratings were about half those of control patients. Benefits were unrelated to hypnotizability, indicating that a significant degree of hypnotic talent is not necessary for this level of intervention focused on relaxation.

Hundreds of thousands of women annually endure pain, as well as distress concerning the fear of cancer, as they undergo excisional breast biopsies. Montgomery, Weltz, Seltz, and Bovbjerg (2002) randomly assigned 20 excisional breast biopsy patients to hypnosis or a standard care control group. Hypnosis reduced postsurgical pain ($p < .001$) and distress ($p < .025$), documenting its efficacy. More recently Lang, Berbaum, Faintuch, Hatsiopoulou, Halsey, Li, Berbaum, Laser and Baum (2006) conducted a prospective randomized controlled

study of simply self-hypnotic relaxation, standard care, or structured empathic attention in 236 women undergoing large core needle breast biopsy. Women in standard care experienced a significant increase in anxiety ($p > .001$), while anxiety did not change in the empathy group, and decreased significantly in the self-hypnosis group ($p < .001$). Pain increased significantly ($p < .001$) in all three groups though less steeply with hypnosis and empathy than standard care. It was concluded that hypnosis more powerfully relieved anxiety without undue cost.

Conclusions

In an uncertain world with natural disasters, war and terrorism, there may be future times when hypnosis may prove invaluable for pain, vascular control and surgery as chemical anesthetics and medications are less available. This occurred during World War II (Sampiman & Woodruff, 1946). Even with the availability of modern anesthetics and medicines, hypnosis has the demonstrated advantages of reducing the need for premedication and for as much anesthesia with their attendant side effects, reducing anxiety and acute pain associated with medical procedures, reducing blood loss, facilitating the reduction of inflammation and more rapid wound healing, and reducing postoperative complications and the length of hospital stays. There are also some patients where chemical anesthesia is contraindicated or poses serious risks, in which cases hypnosis may be beneficial, as well as when it is desirable for a patient to respond to questions or commands and to observe their state of consciousness during surgery (e.g., neurosurgical procedures, therapeutic embolizations of carotid and vertebral arteries, monitoring intraoperative spinal cord function) (Crasilneck & Hall, 1985). Hypnosis also has obvious applications in emergency situations (Ewin, 1983; Hammond, 1990).

Historical examples have been cited that impressively demonstrate that an earlier variant of hypnosis, mesmerism, has been frequently used as sole anesthesia in major surgeries. In these examples, readers may have noticed the strong similarity to the recent nursing technique referred to as “therapeutic touch” (Frank, Frank, March, Makari-Judson, Barham, & Mertens, 2007; Rosa, Rosa, Sarnier, & Barrett, 1998) where mesmerism seems to have been rediscovered, although the historical parallels appear to have gone almost unnoticed by therapeutic touch practitioners.

More contemporary evidence from controlled studies has also been reviewed documenting the important contribution that hypnosis can have in modern times, whether it is in preparation for surgery or medical procedures, during surgery itself, in the recovery room, or following surgery. All of these results were well summarized in a meta-analysis done by Montgomery, David, Winkel, Silverstain, and Bovbjerg (2002) where they evaluated the beneficial impact of hypnosis for surgical patients. They examined 20 published control group studies that used hypnosis with surgical patients to determine: 1) overall, if hypnosis has a significant beneficial impact, 2) whether there are outcomes for which hypnosis is relatively more effective, and 3) whether live versus audiotape hypnosis affected the efficacy. The results revealed a very significant effect size ($D = 1.20$), indicating that surgical patients in hypnosis treatment groups had better outcomes than 89% of patients in control groups. No significant differences were found between clinical outcome categories or between live versus taped induction of hypnosis. Their results support the efficacy of hypnosis as an effective adjunctive procedure for a wide variety of surgical patients.

In an era of escalating health care costs, perhaps the most persuasive argument to convince health care institutions of the value of hypnosis in relation to surgery and medical procedures is its cost effectiveness. Lang and Rosen (2002) evaluated the expenditures involved with patients undergoing vascular and renal interventional procedures where standard sedation was used versus sedation with adjunct hypnosis. The overall cost associated with standard sedation was \$638, compared to \$300 for sedation with adjunct hypnosis, which resulted in a savings of more than 50% (\$338) per case with hypnosis.

Clinicians wishing to find practical hypnotic suggestions for use with surgical, obstetrical and pain patients are encouraged to consult Hammond (1990) and Fredericks (2001). Readers who have found that this paper has stimulated interest in the history of hypnosis are referred to the outstanding works of Gauld (1992), Crabtree (1993) and Edmonston (1986).

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