



## Original article

# The advantages of hypnosis intervention on breast cancer surgery and adjuvant therapy



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## ABSTRACT

**Background:** In oncology, hypnosis has been used for pain relief in metastatic patients but rarely for induction of anesthesia.

**Material and method:** Between January 2010 and October 2015, 300 patients from our Breast Clinic (Cliniques universitaires Saint-Luc, Université catholique de Louvain) were included in an observational, non-randomized study approved by our local ethics committee ([ClinicalTrials.gov](http://ClinicalTrials.gov) – NCT03003611). **The hypothesis of our study was that hypnosis intervention could decrease side effects of breast surgery.** 150 consecutive patients underwent breast surgery while on general anesthesia (group I), and 150 consecutive patients underwent the same surgical procedures while on hypnosis sedation (group II). After surgery, in each group, 32 patients received chemotherapy, radiotherapy was administered to 123 patients, and 115 patients received endocrine therapy.

**Results:** Duration of hospitalization was statistically significantly reduced in group II versus group I: 3 versus 4.1 days ( $p = 0.0000057$ ) for all surgical procedures. The number of post-mastectomy lymph punctures was reduced in group II (1–3, median value  $n = 1.5$ ) versus group I (2–5, median value  $n = 3.1$ ) ( $p = 0.01$ ), as was the quantity of lymph removed (103 ml versus 462.7 ml) ( $p = 0.0297$ ) in the group of mastectomies.

Anxiety scale was also statistically reduced in the postoperative period among the group of patients undergoing surgery while on hypnosis sedation ( $p = 0.0000000000000002$ ).

The incidence of asthenia during chemotherapy was statistically decreased ( $p = 0.01$ ) in group II. In this group, there was a statistically non-significant trend towards a decrease in the incidence of nausea/vomiting ( $p = 0.1$ ), and the frequency of radiodermatitis ( $p = 0.002$ ) and post-radiotherapy asthenia ( $p = 0.000000881$ ) was also reduced. Finally, the incidence of hot flashes ( $p = 0.0000000000021$ ), joint and muscle pain ( $p = 0.0000000000021$ ) and asthenia while on endocrine therapy ( $p = 0.000000022$ ) were statistically significantly decreased in group II.

**Discussion:** Hypnosis sedation exerts beneficial effects on nearly all modalities of breast cancer treatment.

**Conclusion:** Benefits of hypnosis sedation on breast cancer treatment are very encouraging and further promote the concept of integrative oncology.

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## 1. Introduction

Breast cancer is the most frequent cancer in women worldwide. Fortunately, there is an increase in survival rates; this survival

benefit is essentially due to therapeutic progress, and contribution of screening seems to be less evident [1]. However, anticancer treatment is associated with non-negligible side effects related to the different therapeutic modalities, such as [2,3]:

- Side effects associated with surgery: pain, distress, anxiety.
- Side effects associated with radiotherapy: pain, fatigue, radiodermatitis, anxiety.

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- Side effects associated with chemotherapy: nausea, fatigue, muscle pain, vomiting, anxiety.
- Side effects associated with endocrine therapy: pain, muscle and joint pain, hot flashes.

Hypnosis has been used for pain relief in metastatic patients but rarely for induction of anesthesia.

More recently, hypnosis has generated important interest in the management of side effects induced by adjuvant treatments [3].

Numerous studies have highlighted the value of hypnotic procedures in different clinical situations, such as stress or pain management, situations which are very frequent in cancer management [4]. The present study evaluates the effect of hypnosis sedation as a modality of anesthesia for oncologic breast surgery and investigates the effect of hypnosis sedation on different breast cancer treatments.

Some researchers believe that hypnosis is related to an altered state of consciousness while others assume that this phenomenon can be explained by a psychological concept suggested by clinicians'/patients' expectations [5].

Hypnosis has been defined by Liebovici V as “a procedure during which health professional researchers suggest that the patient changes in sensations, perception or behavior”. It remains difficult to provide an optimal definition of hypnosis. However, the definition proposed by Montgomery characterizes hypnosis as an “agreement between a person designated as the hypnotist and a person designated as the patient to participate in a psychotherapeutic technique based on the hypnotist providing suggestions for changes in sensation, perception, cognition, affect, mood or behavior”. This definition emphasizes the relationship between the hypnotist and his/her patient as a necessary condition for anyone practicing hypnosis.

The present study evaluates the effects of hypnosis sedation as a modality of anesthesia for oncologic breast surgery and investigates the effects of hypnosis sedation on different modalities of breast cancer treatment [6,7]. The hypothesis sustained by our study is that hypnosis intervention is able to decrease side effects of surgery and other cancer therapeutic options.

## 2. Material and method

Between January 2010 and October 2015, 300 patients from our **Breast Clinic** (King Albert II Cancer Institute, Cliniques universitaires Saint-Luc, Université catholique de Louvain) were included in an observational non-randomized study approved by our local ethics committee ([clinicaltrials.gov](http://clinicaltrials.gov) – NCT 03003611).

One hundred and fifty consecutive patients underwent **breast surgery** (lumpectomy or mastectomy) +/- axillary lymph node dissection or sentinel lymph node biopsy while on general anesthesia (group I) and 150 consecutive patients underwent the same surgical procedures while on hypnosis sedation (group II).

The **tumor characteristics** were well balanced between the two groups, as mentioned in **Table 1**. **Patients' characteristics and treatment modalities** are described in **Table 2**.

After surgery, 32 patients received chemotherapy in both groups, radiotherapy was administered to 123 patients in both groups and 115 patients in both groups received endocrine therapy.

**Hypnosis sedation** was performed as follows:

The first and very important step was the preoperative consultation. The anesthesiologists had to explain the modalities and the course of the entire procedure. They also had to check if the patient was a good candidate for hypnosis sedation.

At the time of the surgical procedure, all patients were classically monitored with ECG, noninvasive blood pressure measurement, blood oxygen saturation (SpO<sub>2</sub>) assessment and

**Table 1**  
Tumor characteristics.

Histologic subtype	General anesthesia group I	Hypnosis sedation group II
DCIS	23	23
LCIS	9	10
IDC	85	86
ILC	17	20
Mixed (IDC + ILC)	12	15
Other subtypes	5	0
ER and/or PgR (+)	130	131
HER2+ (FISH +)	9	8

DCIS: ductal carcinoma *in situ*.

LCIS: lobular carcinoma *in situ*.

IDC: invasive ductal carcinoma.

ILC: invasive lobular carcinoma.

ER: estrogen receptor.

PgR: progesterone receptor.

HER2: Human Epidermal Growth Factor Receptor-2.

FISH: Fluorescent *in situ* hybridization.

**Table 2**  
Patients' characteristics and treatment modalities.

	General anesthesia group I (150 patients /151 procedures)	Hypnosis sedation group II (150 patients/154 procedures)
<b>Mean age (years)</b>	58	59.5
<b>Menopausal status</b>		
Premenopausal	26	25
Postmenopausal	124	125
<b>Treatment modalities</b>		
Lumpectomy alone	10 (10 patients)	17 (14 patients)
Lumpectomy + SLNB or ALND	92	94
Mastectomy alone	32	33
Mastectomy/SLNB or ALND	1	1
Radiotherapy	16	16
Chemotherapy	123	123
Trastuzumab	32	32
Endocrine therapy	9	8
	115	115

capnography. Lorazepam 0.5 mg was proposed to the patient 1 h before surgery as premedication. Oxygen was given. After obtaining a comfortable position on the operating table, the anesthesiologist induced hypnosis with a technique described by Milton Erickson, inviting her patient to fix her eyes on a point in front of her and to concentrate on her body in order to achieve increasing muscle relaxation and finally closure of the eyes. Progressively, guided by the voice of the anesthesiologist, the patient was invited to focus her attention on a positive memory. Using a calm and monotonous voice, the anesthesiologist continually talked to the patient, guiding her with permissive and indirect suggestions of well-being to relieve her dream or experience and remain detached from the reality surrounding her. A state of intense well-being is reached and maintained during all the surgery. A continuous infusion of remifentanyl, a micro-opioid drugs, was started at the rate of 0.05 µg/kg/min and modified as required. In some cases, the infusion of remifentanyl was stopped. Midazolam was sometimes titrated at 0.1 mg/0.1 mg if needed as an anxiolytic. A signaling system was established between the patient and the anesthesiologist in case of discomfort. If the patient reports such discomfort during the procedure, the anesthesiologist strengthens the hypnotic state, asks the surgeon to give more local anesthesia and can also increase the infusion rate of remifentanyl. The goal is to insure a consistent level of comfort. At the end of the surgery, the anesthesiologist gives recommendations to the patient aimed at maintaining comfort in the postoperative period, leading to correct healing, keeping the

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