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Editorial

Laparoscopic Surgery: Do we really need a Deep Block?

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Editorial

The introduction of curare by Griffith into clinical practice in 1942 remains a breakthrough in the history of practice of anesthesia [1]. Although it has been used by Indians as an arrow poison as reported by Sir Walter Raleigh in 1595, yet Watterson and Brodie described the death from it as being due to respiratory paralysis in 1814, a finding confirmed by Claude Bernard in 1840.The first true substrate available for clinical practice was called "Intocostrin" which was used in doses of 100 mg to ensure muscle relaxation while the patient was breathing spontaneously [1]. Gradually with increased familiarity with these drugs evolved the "Liverpool technique" where high doses of muscle relaxants were used with O_2/N_2O hyperventilation and deep blocks started to develop [2].

To reach adequate inflation pressures during laparoscopic surgery, surgeons have always had the myth that deep muscle relaxation is an essential part of such technique. This myth grew even bigger with the introduction of low pressure laparoscopic surgery. Nowadays, there is a rising controversy about the level of neuromuscular block that should be achieved and maintained during laparoscopy. Depth of block can be graded as follows: Extreme block with Posttetanic Contraction (PTC) of zero; Deep (profound, extreme) block with PTC of 1 or more while Train of Four (TOF) count is zero; moderate block with TOF count of 1 to 3 while shallow block has a TOF of 4 with fade [3].

Such major debate appeared recently in the literatures about using deep or moderate block during laparoscopy surgery, and no conclusive evidence supports any of them. Deep muscle relaxation can improve surgical conditions especially during low pressure laparoscopic surgeries; however it is associated with postoperative residual curarization [4,5].

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Deep relaxation with rocuronium cannot be used in all patients undergoing laparoscopic surgery especially those with renal or liver impairment [6,7]. In addition, reversal with an expensive drug like sugammadex limits its routine use. Although sugammadex enhances faster recovery after rocuronium, recurariaztion has been observed after its use in obese patients [8].

Recently, Baete et al., found no added benefit of deep muscle relaxation during bariatric surgery over moderate relaxation [8]. Others have observed marginal improvement in surgical conditions with deep relaxation with low pressure laparoscopic cholecystectomy. Despite this marginal improvement of surgical conditions with deep relaxation only 48% of surgeries were completed using such pressure [9].

More importantly, Chassard et al., as well as Chen et al., found that surgeons who were blinded by the anesthesia technique could not identify any difference in surgical conditions in the event of using or not using a muscle relaxant with TIVA during laparoscopic gynecological surgeries [10,11].

Using single dose of rocuronium 0.6 mg/kg, Paek et al., could manage laparoscopic pelvic surgeries under TIVA for around 100 minutes duration with adequate operating circumstances, even though at least the last 30 minutes were done without any residual effect of muscle relaxant [12]. It is also worth noting that the intraoperative use of muscle relaxants increases the incidence of awareness and interferes with the BIS readings [13,14].

It is clear that the use of deep muscle relaxation during laparoscopic surgery is quite hazardous and necessitates the availability of sugammadex as the drug of choice for rocuronium reversal. Denying the patient from moving as a sign of awareness as well as interference with the actual BIS values is another pitfall for this technique. Omitting muscle relaxants completely from anesthesia still carries the hazards of coughing or straining during surgery with a suboptimal working surgical field. It also needs the use of a potent narcotic agent (remifentanil) to facilitate the ventilation of the patient.

Furthermore, quantitative neuromuscular monitoring is the cornerstone of the anesthetic technique during laparoscopic surgery to prevent residual curarization and maintenance of a moderate block (TOF count 1 to 3) seems to be an adequate practice until further studies proves any different approach to reach conclusive evidence for better patient care and proper use of hospital resources [4,5].

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