شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

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A THESIS FOR THE PARTIAL FULLFILMENT OF MASTER DEGREE IN ANAESTHESIOLOGY

Title of thesis:

A PROSPECTIVE EVALUATION OF DIFFERENT KETOFOL CONCENTRATIONS FOR SEDATION AND ANALGESIA IN CATARCT SURGERY PERFORMED UNDER LOCAL ANESTHESIA

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Abbreviations

- **ABP**: arterial blood pressure.
- **ACEP**: American college of emergency physicians.
- **ASA**: American society of anesthesiology.
- **BBB**: blood brain barrier.
- **BIS**: Bispectral index.
- **BMI**: body mass index.
- **CBF**: cerebral blood flow.
- **COP**: cardiac output.
- **CNS:** Central nervous system.
- **$CMRO_2$**: Cerebral metabolic rate of oxygen.
- **CPP**: Cerebral perfusion pressure.
- **CRPS:** Complex Regional Pain Syndrome.
- **EEG**: Electro-encephalogram.
- **EOMS**: extra-ocular muscles.
- **FDA**: Food and drug administration.
- **GA**: general anesthesia.
- **GANA**: General anesthesia no airway.
- **GABA**: ɣ-amino butyric acid.
- **HR**: Heart rate.
- **BP:** Blood pressre.
- **ICU**: Intensive care unit.
- **ICP**: Intra cranial pressure**.**
- **INR**: international normalized ratio.
- **IOP:** Intra-ocular pressure**.**

- **IL :** Interleukin.
- **LMW**: low molecular weight.
- **LOC:** Loss of consciousness.
- **LSD**: least significant difference.
- **MAC:** Monitored anesthesia care**.**
- **MAP:** Mean arterial pressure**.**
- **MOAA/S:** Modified Observer's Assessment of Alertness/Sedation scale.
- **NMDA:** N-methyle d- aspartate**.**
- **NF-kB :** Nuclear factor-kB
- **OAA/S**: the observer's assessment of alertness &sedation scale.
- **OCR:** Oculo-cardiac reflex.
- **PACU:** Postanesthesia care unit.
- **PONV**: post operative nusea and vomiting**.**
- **PSA**: procedural sedation and analgesia.
- **RR:** Respiratory rate.
- **RSS:** Ramsy sedation score**.**
- **SD**: standard deviation.
- **SVR**: systemic vascular resistance.
- **TCI:** Target-controlled infusion.
- **USA:** united States of America**.**
- **VD**: Volume of distribution.

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INTRODUCTION

What is already known on this subject? AND What does this study add?

This current study suggests that Ketofol (ketamine/Propofol) concentration at ratios 3:1 and 4:1 may provide effective and safe sedation for patients undergoing ophthalmic procedures under regional anesthesia. An intravenous infusion of a 4:1 ratio is a suitable alternative for delivering Ketofol; this provides more stability and consistency of sedation depth and less need for top-up doses that may lead to overshoot of sedation and a delayed recovery. The ratio for the infusion regimen, however, seems best at 4:1 because the overall dose of both drugs required to achieve the same clinical end points is less with a constant infusion, so the ketamine component, which is responsible for the much longer recovery time, can be reduced and a consistent depth of sedation is achieved.

1. INTRODUCTION/ REVIEW

Cataract surgery is the commonest ophthalmic surgical procedure and a local anaesthetic technique is usually preferred. Patient comfort, safety and low complication rates are the essentials of local anaesthesia. The anaesthetic requirements for ophthalmic surgery are dictated by the nature of the proposed surgery, the surgeon's preference and the patient's wishes. The provision of ophthalmic regional anaesthesia for cataract surgery varies worldwide. These may be chosen to eliminate eye movement or not and both non-akinetic and akinetic methods are widely used. [1-2]

Some drawbacks are linked with regional anaesthesia techniques: pain at the puncture site, fear of needles, and recall of the procedure. These factors stress the importance of sedation that offers analgesia, anxiolysis, and amnesia. Sedation has been shown to increase patient satisfaction during regional anaesthesia and may be considered as a mean to increase the patient's acceptance of regional anaesthetic techniques. [3]

A multitude of sedative and analgesic agents are frequently used. Titration of anesthetic doses should be done cautiously and the patients should be continuously monitored. So far, an ideal intravenous anesthetic agent doesn't exist . [4] Ketofol is the combination of ketamine and Propofol in various concentrations and it has

several ideal properties. It commonly used for several procedural sedation.

Ketamine, a neuroleptic anesthetic agent, works on thalamocortical and limbic N-methyl-D-aspartate (NMDA) receptors. [5] Ketamine stimulates the cardiorespiratory system. A direct effect increases cardiac output, arterial blood pressure, heart rate and central venous pressures. Therefore, it is a valuable agent for hypotensive or hypovolemic patients, but a less desirable agent in patients with ischemic heart disease or raised pulmonary vascular pressure. ketamine induces psychomimetic activity and emergence reactions in up to 30% of patients. In contrast, propofol, a sedative, hypnotic and anesthetic agent, is also an antagonist at N-methyl-D-aspartate receptors. [4] However, propofol has a narrow therapeutic range and risks of cardiovascular depression. [5]

Combining these two agents; preserve sedation efficacy while minimizing their adverse effects; thus, theoretically balance each other out when used together.

ANATOMY

ANATOMY

As with all anesthetic techniques, thorough knowledge of the anatomy is essential. Anatomy of the eye and its nerve supply is necessary for the safe practice of ophthalmic regional anesthesia.[6]

The anatomical features of the orbit permit the passage of needles into fiber-adipose compartments in the mid orbit avoiding close contact with the globe, major blood vessels, extra-ocular muscles and the lacrimal apparatus. [7]

The bony orbit

The orbits are two symmetrical bony enclosures in the front of the skull, each containing an eyeball and its associated structures. The cavity of each orbit is an irregular four-sided pyramid, with an apex pointing posteriorly and a trapezoidal base facing anterolaterally. Seven facial bones conjoin to form the orbital structure; frontal, maxillary, zygomatic, sphenoid, ethmoidal, lacrimal and palatine bones. [8]

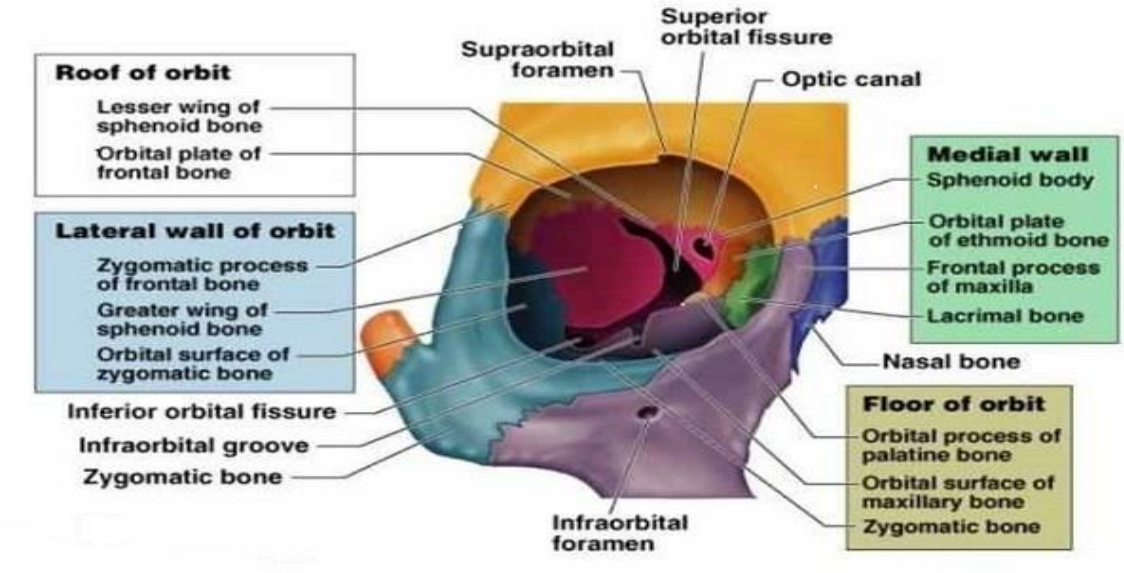

Figure 1: Anatomy of the bony orbit [9]

Extraocular muscles

These consist of levator palpebrae superioris and six extra-ocular muscles:
the four recti (superior, inferior, lateral, and medial) and two obliques (superior and inferior).

The recti arise from a fibro-tendinous ring (annulus of Zinn) surrounding the optic foramen and inferior part of the superior orbital fissure and insert anterior to the equator of the globe.[7]

A narrow inter-muscular membrane connects the recti in a circumferential band anteriorly, so an incomplete fibromuscular cone is formed. This allows the infiltration of small volumes (3–5 ml) of local anaesthetic into the small intra-conal space (*via* retrobulbar injection); blocking the nerves which pass through it. Extra-conal, or peribulbar, injection requires larger volumes (5–15 ml) which diffuse intra-conally to effect neural blockade.[10]

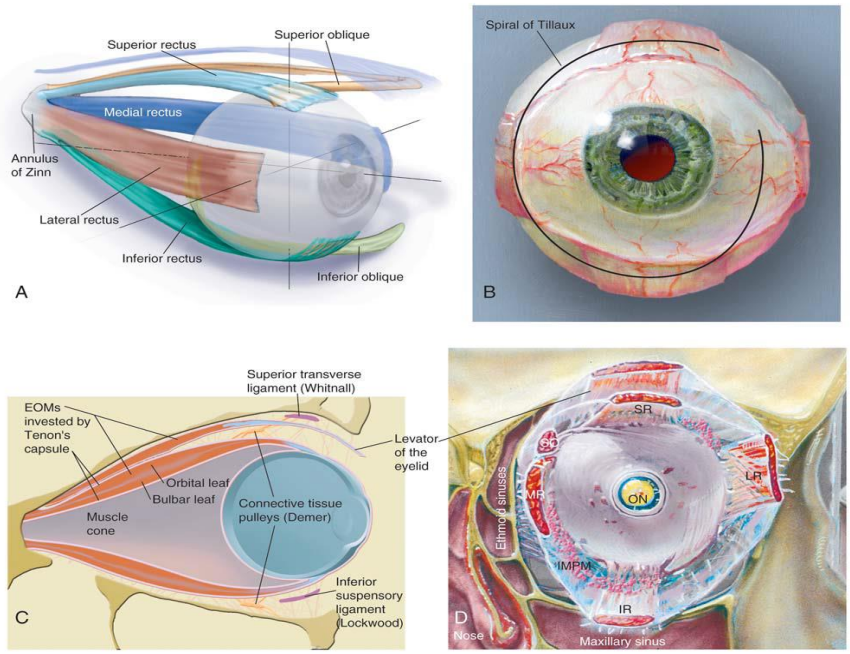

Figure 2: Extraocular muscles (EOMs). **A.** EOMS of the right eye viewed from antero-lateral, color coded by their cranial nerve innervation. **B.** Posterior Tenon's capsule around and between the EOMs. **C.** Tenon's capsule and the muscle cone. **D.** Posterior view of muscle cone; Tenon's capsule continues posteriorly adherent to the globe to eventually encircle the optic nerve. [10]