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To keep pace with the rapid advances in ophthalmic surgery, the race is now on towards faster, safer and effective ocular anaesthesia. General anaesthesia introduced in 1846 was not welcomed by the ophthalmic surgeon because it made the operation more difficult due to orbital congestion, and the extra time necessary for the patient to be made ready. Additionally, the proximity of the anesthetist to the surgical field, trying to keep the patient breathing and motionless added to the difficulties. Besides, general anaesthesia carried the risk of death.

The concept of ocular anaesthesia dates back to 1884, when Carl Koller first reported the use of topical cocaine in producing complete ocular anaesthesia. Cocaine abolished pain even though it did not keep the lids and the eye immobile. However, topical cocaine did not diffuse deep enough to abolish sensations from the iris in most patients and did not eliminate pain from pull on the muscles or the cutting of the optic nerve.

The technique of retrobulbar anaesthesia has been described as early as 1884 by Knapp but this form of ocular anaesthesia alone left the lids mobile or required a supplement injection to make them immobile, besides its many complications.

But surgical anaesthesia with accompanying akinesia of the globe and eyelids are the objectives while performing eye surgery and this can be achieved by the peribulbar block.
Drs. Davis and Mandel, with their publication of peribulbar anaesthesia in 1986, startled the ophthalmic world using an alternative term for injections of anaesthetic blocks behind the eye-namely, peribulbar anaesthesia. In their original publication, a 35 to 38 mm Atkinson short bevelled needle was placed deep in the orbit in the periorbital space in the infero-temporal and supero-nasal quadrants, instead of in the muscle cone.

Peribulbar anaesthesia is a valuable addition to ophthalmic surgery for it eliminates the serious side effects, though few. These complications include retrobulbar haemorrhage, respiratory depression, intradural or subarachnoid injection, optic nerve damage and perforation of the globe.

Contrary to retrobulbar block the effect of peribulbar block is slow, because the anaesthetic agent is deposited outside the muscle cone and must diffuse through various tissue barriers before reaching the nerve membrane. Therefore, frequent clinical problems associated with the peribulbar block are, increased time of onset for anaesthesia and akinesia of the eye, higher initial failure rate and higher volume of local anaesthetic used when compared with retrobulbar block. Because of incomplete anaesthesia, further injections are often required.

To overcome this shortcoming Meyer and associates first isolated the enzyme hyaluronidase. Later, studies established the fact that the addition of hyaluronidase caused a rapid dispersion of fluid when injected into tissues. This was brought about by
depolymerization and hydrolysis of hyaluronic acid gel. The reduction in viscosity removes one of the barriers to diffusion of fluid and allows it to permeate the tissue more rapidly and widely resulting in a shorter onset time for anaesthesia and akinesia in peribulbar block.

As efforts to overcome the slow onset of anaesthesia together with prolonging the duration of anaesthesia continued, different researchers suggested that relative alkalinity of the local anaesthetic agent can be a major determining factor in altering the onset and duration of the block.

Addition of sodium bicarbonate to local anaesthetic solution results in an increase in the pH of the local anaesthetic solution, leading to an increase of the drug in the uncharged base form, which is the form more permeable to the nerve sheath and nerve membrane thereby resulting in a more rapid onset of the block.

This inspired us to conduct a study to evaluate the effect of alkalinization and/or hyaluronidase with lignocaine hydrochloride and adrenaline in peribulbar block.