

ESCRS EUROTIMES

A EUROPEAN OUTLOOK ON THE WORLD OF OPHTHALMOLOGY

Signature system provides the ultimate lens removal surgery



Ahmed Assaf

Donald R Nixon

Stefanie Petrou Binder MD

THE WhiteStar Signature System (AMO, USA) enhances ultrasound efficiency during lens removal surgery at low power, flow rate and vacuum parameters, reported researchers at the XXVI Congress of the ESCRS.

“Fusion Fluidics is a major step on the way to ultimate lens removal surgery. The fast visual recovery fulfils the high patient expectations, said Ahmed Assaf MD, Ain Shams University, Cairo, Egypt.

Dr Assaf operated on 50 eyes of 32 patients with N3+ cataracts that he selected based on the Pentacam grading system. All eyes were operated using biaxial microincision cataract surgery (MICS) with a 20-gauge system through a 1.4mm incision. He used the quick chop technique for nucleus disassembly.

Results showed that the fluidics parameters played a crucial role during cataract surgery, especially with bi-axial MICS. The system provided excellent chamber stability and anticipated occlusion breaks by proactively adjusting the vacuum, for a better more stable anterior chamber.

The maximum vacuum was 350 mmHg with an up threshold of 300 mmHg. Up-time was 200-600 ms, depending on the hardness of the nucleus, Dr Assaf said.

The CASE vacuum, or “safe vacuum”, at which the chamber stabilisation environment (CASE) software reduced the vacuum to avoid surge was 280 mmHg and occlusion mode was on. Because of the optimised fluidics settings, phaco could be

performed for N3+ cases using minimal ultrasound power of five to 10 per cent, he noted.

Dr Assaf observed less increase of central corneal thickness with better best corrected visual acuity on the first postoperative day. Considering the high patient demands for fast visual rehabilitation after cataract surgery, these newly developed fluidics settings are an improvement upon previous systems, giving the surgeon just what he requires, he said.

In fact, computer-controlled systems are essential to meet today’s needs, concurs Donald R Nixon MD, who compared the Signature system to the Sovereign (AMO) in two consecutive groups of 200 patients, at the Trimed Eye Centre, Barrie, Ontario, Canada.

“The Signature system has a faster central processor than the Sovereign and a faster pump speed. There is a five-fold increase in data sampling (100 ms to 20 ms) and response. All of the parameters are adjusted for “on the fly” and therefore events that occur in that microenvironment at the phaco tip can be dealt with much more effectively. This was apparent in the outcomes,” Dr Nixon said.

In the investigation, one surgeon performed all of the surgeries using the same technique. Dr Nixon evaluated both groups pre-operatively with the Oculus Pentacam Nuclear grading System PNS (Figure 1), which analyses the anterior segment through Scheimpflug technology, yielding high resolution images and

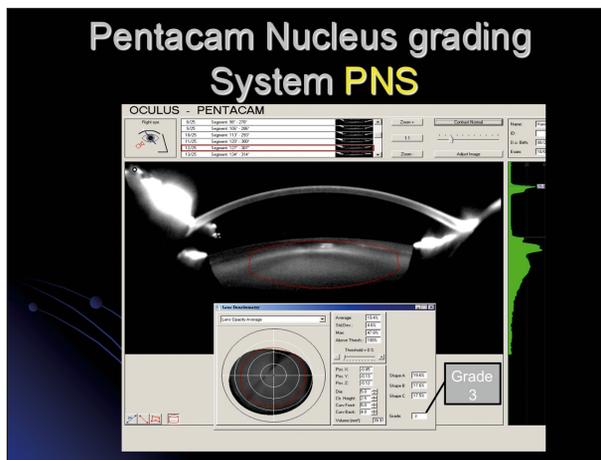


Figure 1



Figure 2

Courtesy of Donald R Nixon MD

both single and 3D reproductions, and determines the cataract grade from one to five. Dr Nixon explained that phaco energy is used primarily to emulsify the nucleus and to a lesser extent the epinucleus. It is this area through a dilated pupil that the PNS software in the Pentacam evaluates in an objective and reproducible fashion to determine the cataract grade. It requires less than 10 seconds to perform and can be done during the initial patient visit. This information can be used by the individual surgeon to assess different systems and

techniques on the same cataract grade (Figure 2).

He recorded the effective phaco time, balanced salt solution usage, and needle time and matched them to the nuclear grade (Figure 3).

The base setting phaco parameters were 20 per cent power and 20 per cent duty cycle for Grade 2-3; 50 per cent lower power and 20 per cent lower duty cycle for Grade 1; and 100 per cent higher power and 20 per cent greater duty cycle for Grade 4-5 cataracts (Figures 4 and 5). He evaluated the data collected for phaco parameters with the same three sets of grades.

Dr Nixon observed a linear correlation of effective phaco time to cataract grade, in both of the phaco systems used. There was a statistically significant lower effective phaco time using the Signature system in the Grade 2-3, and 4-5 groups, but not in Grade 1. There was a statistically significant lower amount of balanced salt solution used with the Signature system across the three groups. There was a statistically significant lower needle time in the Grade 2-3 and 4-5 groups that did not reach statistical significance in the Grade 1 group.

The grading of a cataract using the Pentacam system showed a linear correlation

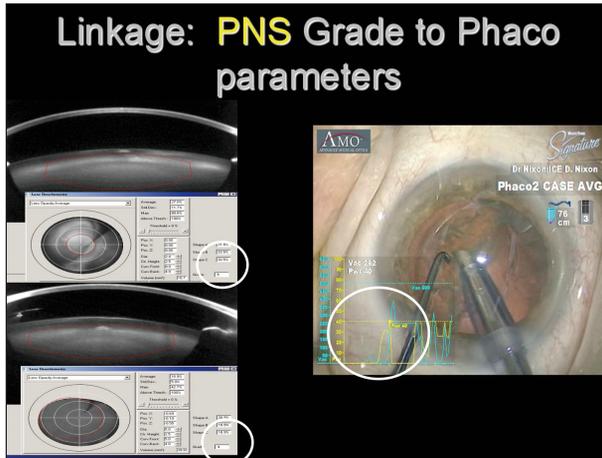


Figure 3

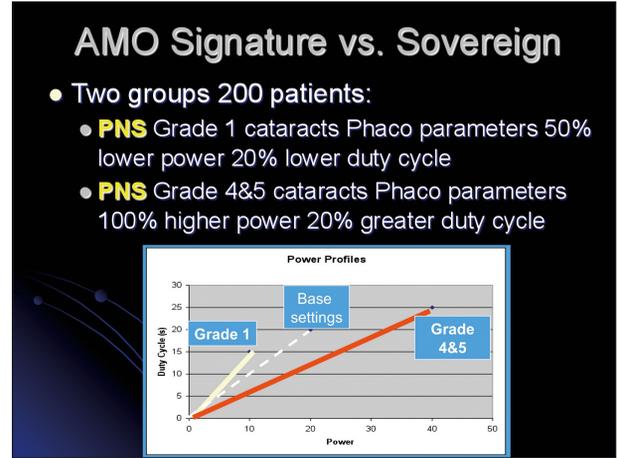


Figure 4

to the amount of phaco energy required to remove it, he observed. Several parameters used to assess phaco efficiency suggested an advantage for the new AMO WhiteStar Signature, he noted.

“It seems logical to suggest that phaco parameters adjustment of the two ends of the cataract spectrum may improve phaco efficiency. This study, however, only evaluated longitudinal phaco power not elliptical movement allowed by the new ELLIPS system. There may be a need to individualise the PNS software to be surgeon specific, or the need to adjust the PNS software for different ethnic populations,” he noted.

Dr Nixon believes that being able to preoperatively assess the cataract grade may

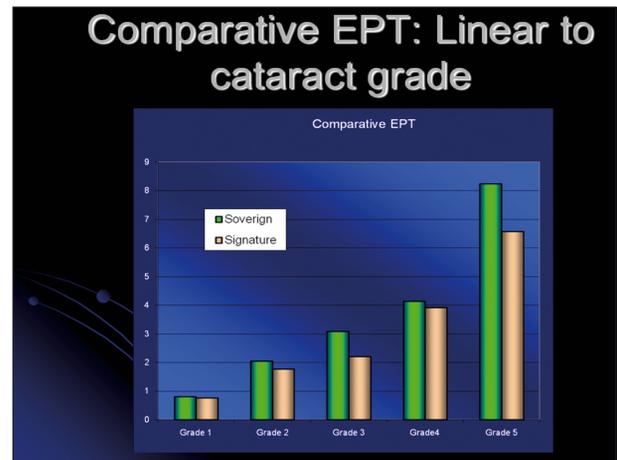


Figure 5

Courtesy of Donald R Nixon MD

allow the surgeon to pre-programme the phaco settings to further improve safety and efficiency.

assaf.ahmed@gmail.com
trimedeyedoc@rogers.com