Basic Phaco Techniques & Technology

Brian Little
Who are YOU?
“The only new things in the world are the history you never read”
Microincision Cataract Surgery
Topical Anaesthesia
< 20 seconds
1999
Sutureless Cataract Surgery
Topical Anaesthesia
< 45 seconds
29th November 1949

1949 Heretic

2000 Hero: Knighted, FRS
3,589,363
July 25 1967
John Martin, 1969

Dr Charles Kelman
But beware......
Having the best machine is no guarantee of success: you still have to be able to control it.
Phacoemulsification: where are we now?

“A technique for cataract surgery using ultrasonic energy which has gained universal popularity as the most technically sophisticated method currently available in the developed world for inducing angina in an ophthalmologist”
What developments have helped to get us to where we are today?
Significant Developments?

- **Machine**: power modulation, fluidics, dual-linear
- **Handpiece**: Neosonics, Aqualase
- **Tip**: flare, ABS, microflow, Kelman
- **Viscoelastics**: dispersive, cohesive, adaptive
- **Tubing**: non-compliant anti-surge
- **Instruments**: blades, choppers, CCC forceps
- **IOL**: foldable, toric, multifocal, focus shift
“Development?”

○ Positive connotations
  ○ advancement
  ○ refinement
  ○ improvement

○ Critical appraisal
  ○ tangible patient benefit?
  ○ safer, better outcome, quicker, cheaper
Which would YOU choose?

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- **Handpiece**: Neosonics
- **Tip**: flare, ABS, microflow, Kelman
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Power Modulation

- Pattern of delivery of U/S power
  - Continuous, Pulse, Burst
- Software development
- Same surgical techniques
- Greater efficiency & followability
- Less energy, less heat (NOT “cold”)
- No drawbacks?
Measuring Phaco Energy

- We can’t yet do it
- Forced to use EPT or APT
  - Equivalent or Absolute Phaco Time
- Duration at 100% Power
- Power (%) x Duration (s)
  - 100% x 15s = 15s
  - 50% x 30s = 15s
  - 25% x 60s = 15s
Basic Power Modulations

Continuous

Pulse

Burst
Duty Cycle

ON time: U/S delivery, repulsion, heat

OFF time: no U/S, aspiration, cooling
Practical Benefits?
Many parallel developments
Interdependent & synergistic
Embrace innovation: tangible benefit
There are no new phaco complications
All are due to our use of the technology and not the technology itself
Understand the machine: knowledge is power
Thank You