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Comparative Analysis of Implantation Behavior of Different Hydrophobic Intraocular Lenses with Preloaded and Conventional IOL delivery systems

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Contamac[1]
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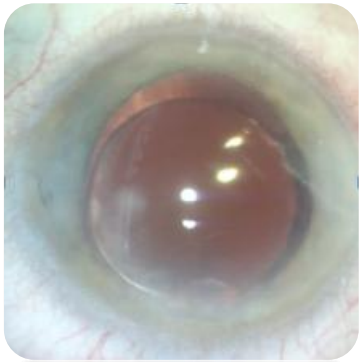
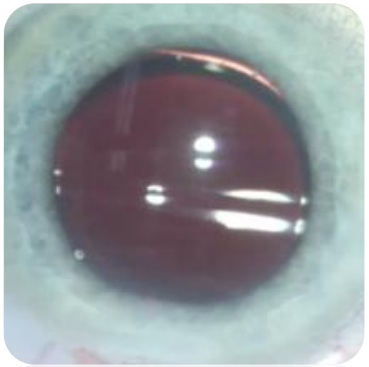
Purpose

- Evaluation of unfolding characteristics of preloaded hydrophobic intraocular lenses
- Statistical evaluation of implantation behavior
- Check for complications during implantation
- Visualize injector cartridge damages

Methods

Prospective interventional case study

88 implantations of different hydrophobic lenses

	
AcrySof® SN60WF (Alcon)	CT LUCIA® 601P (ZEISS)
	
Tecnis® PCB00 (AMO)	iSert® 254 (HOYA)

IOL data overview

Model	AcrySof SN60WF	CT LUCIA 601P	Tecnis PCB00	Vivinex XY1
Lens Design	Single-piece	Single-piece	Single-piece	Single-piece
Optic Design	Biconvex, Aspheric	Monofocal, aspheric (aberration correcting)	Biconvex, anterior aspheric surface	Aspheric ABC Design with sharp textured optic edge
Optic Material	Acrylate/Methacylate Copolymer	Hydrophobic acrylic with heparin coated surface	UV-blocking hydrophobic acrylic	Hydrophobic acrylic Vivinex™ Materials with blue light filtering
Optic Diameter	6.0 mm	6.0 mm	6.0 mm	6.0 mm
Overall Length	13.0 mm	13.0 mm	13.0 mm	13.0 mm
Haptic Angulation	0°	5°	NA	NA
Haptic Configuration	STABLEFORCE® Haptics	C-Loop	Tri-Fix offset haptics	textured-rough haptic surface
Suggested A-Constant	118.7	118.5	118.8	118.9
Refractive Index	1.55	NA	1.47	NA
Incision Size	2.4 mm	2.2 mm	2.2–2.4 mm	2.0 mm
Diopter Range	+6.0 to +30.0 D, 0.5 D increments	+4.0 to +30.0 D, 0.5 D increments	+5.0 D to +34.0 D, 0.5 D increments	+6.0 to +30.0 D, 0.5 D increments

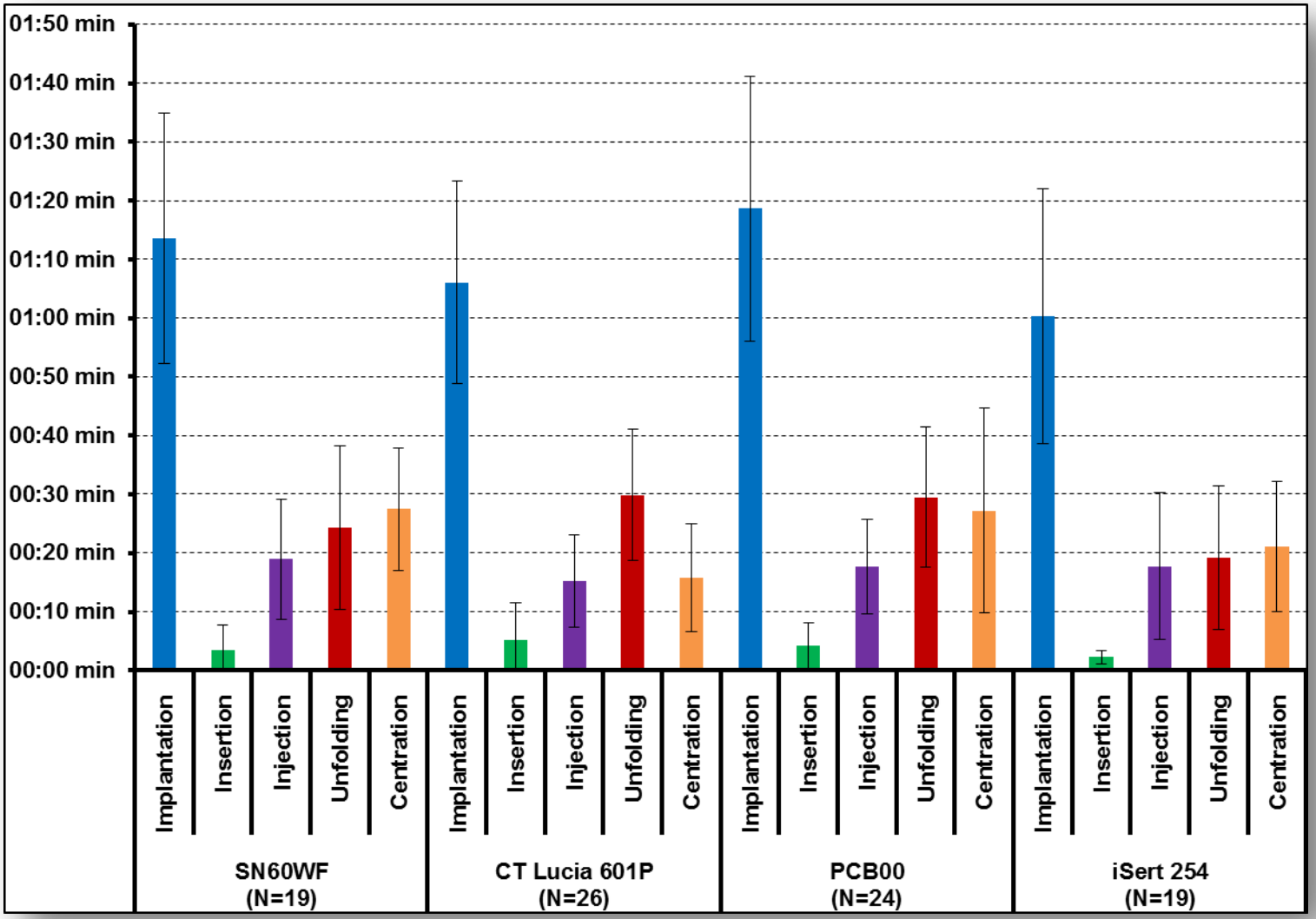
Preloaded Systems

	
AcrySert with AcrySof® SN60WF (Alcon)	ACCUJET with CT LUCIA® 601P (ZEISS)
	
Itec with Tecnis® PCB00 (AMO)	iSert® with Vivinex XY1 IOL (HOYA)

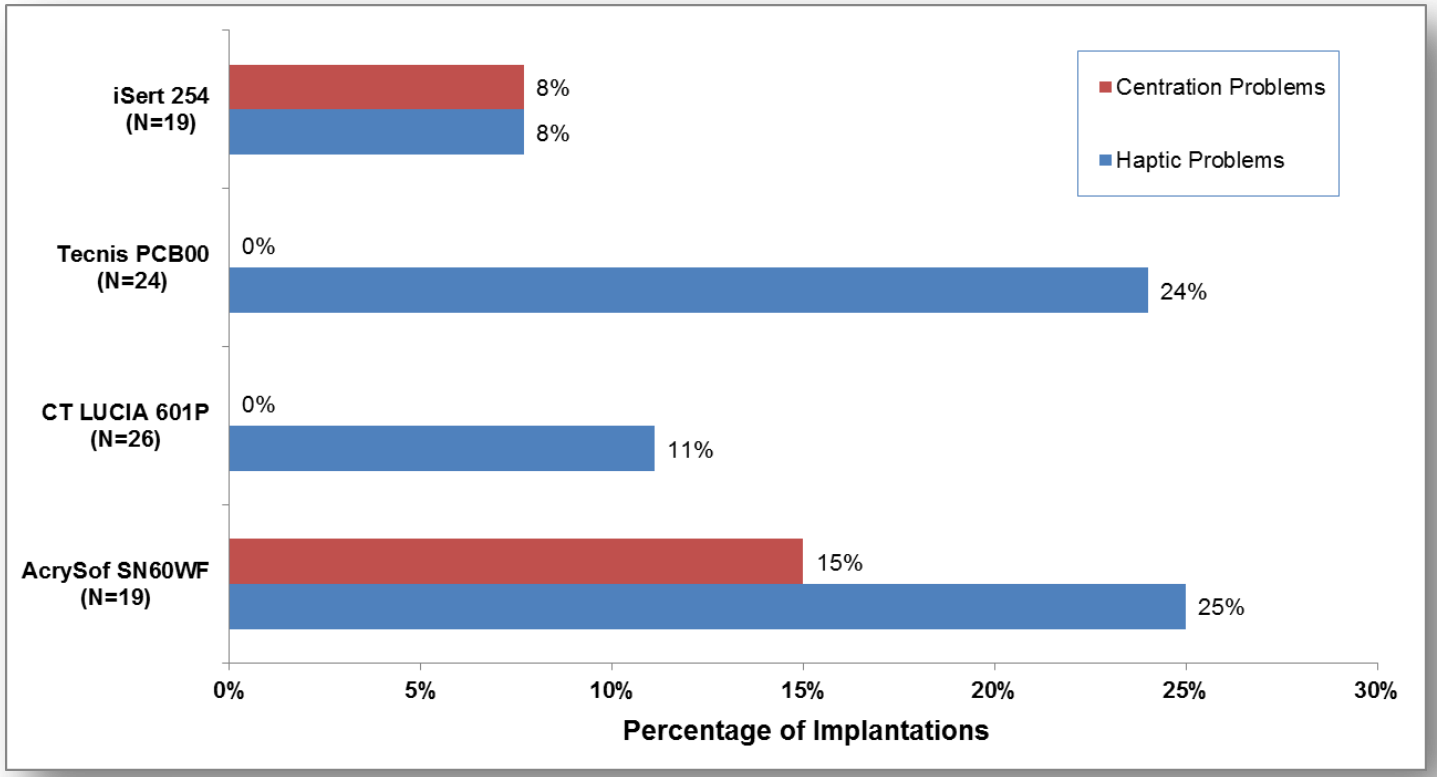
Results

- All intraocular lenses could be implanted without complications
- Unfolding time ranged from 30 sec to 120 sec
- Several hydrophobic lenses presented with adhesions of the haptics to the anterior or in some cases even the posterior surface of the optic
- Stickiness was different between the different types of hydrophobic materials
- No damage to optics or haptics due to the implantation process occurred
- All cartridges were analyzed using light microscopy and in some cases during IOL delivery damage of the nozzle of the cartridge occurred

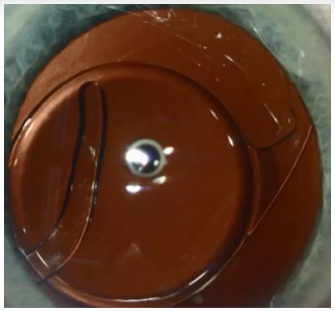
Statistical evaluation of implantation behavior



Complications during Implantation

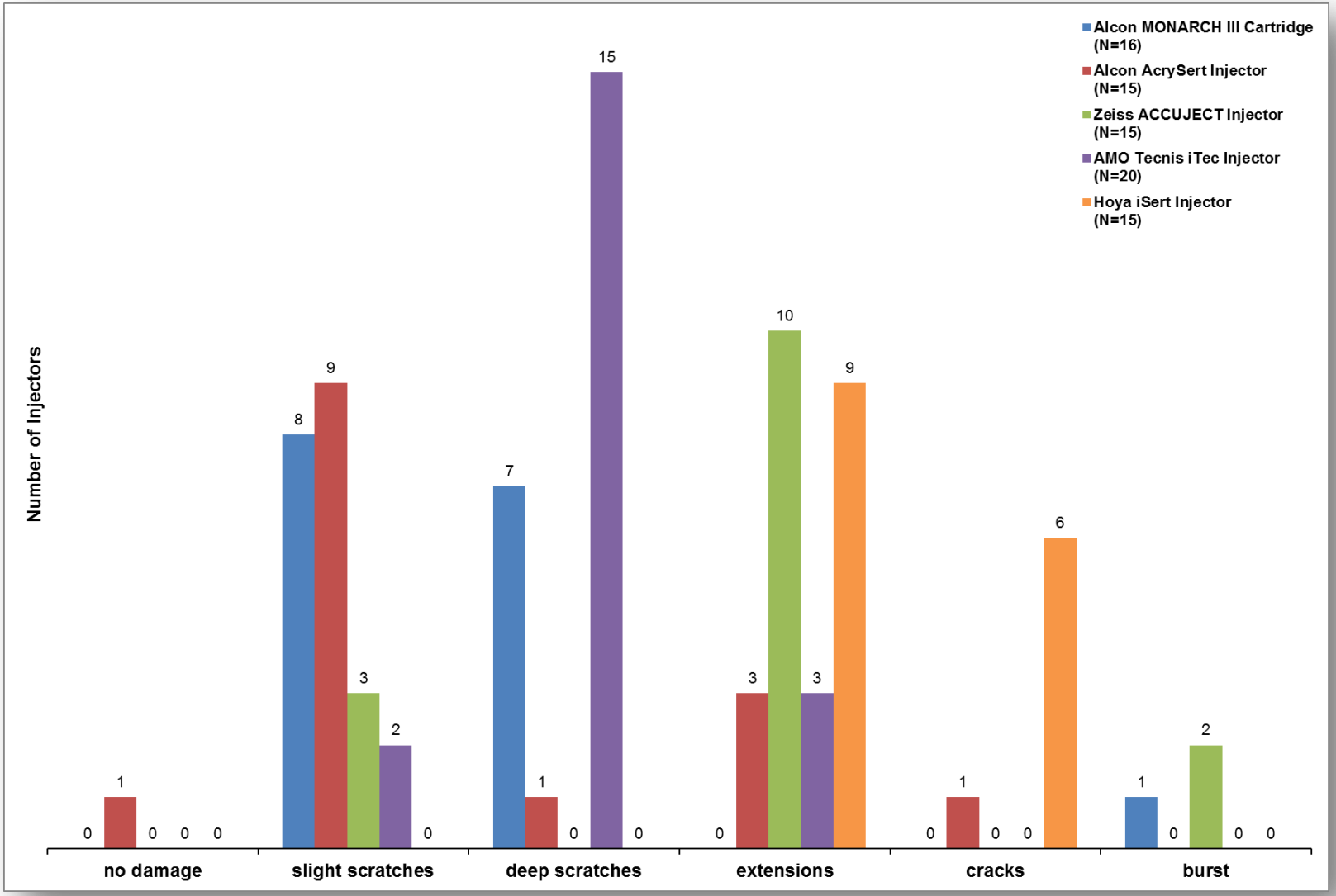


"Handshaking Haptics"



"Haptic behind optic"

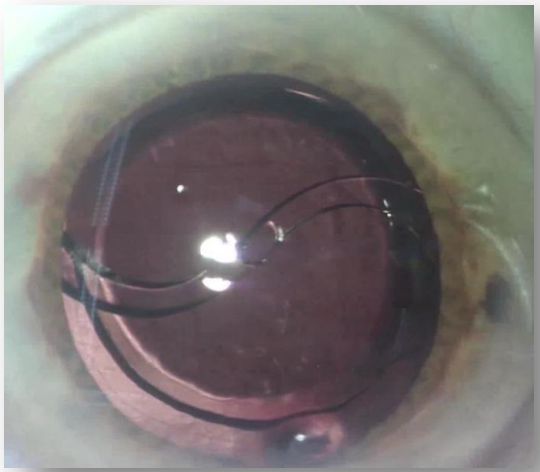
Injector cartridge damages



Conclusions

- Implantation and unfolding behavior among hydrophobic intraocular lenses revealed large variability

- Haptic adhesions to the optic (“Handshaking Haptics”) can be of clinical significance, especially in complicated cases



- Injector cartridge damages occurred for the majority of cartridges

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