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Mini-Scleral Contact Lens in Pediatric Age Group: Indications, Safety and Efficacy

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Introduction

- In the last few years, there have been major advances in the therapeutic application of scleral lenses.
- pediatric contact lens fitting presents special challenges:
 - Children's lack of cooperation and
 - Role of care givers.



Introduction; Special considerations:

- Ectatic disorders, traumatic corneal scars, and OSDs are not uncommon in children.
- Fewer surgical options:
 - higher risk of surgeries such as corneal graft rejection and
 - postoperative inflammation,
- Higher life expectancy
- Risk of amblyopia
- More challenging fitting process
- Data on fitting feasibility, safety, and efficacy in pediatric patients are scarce.



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Methods:

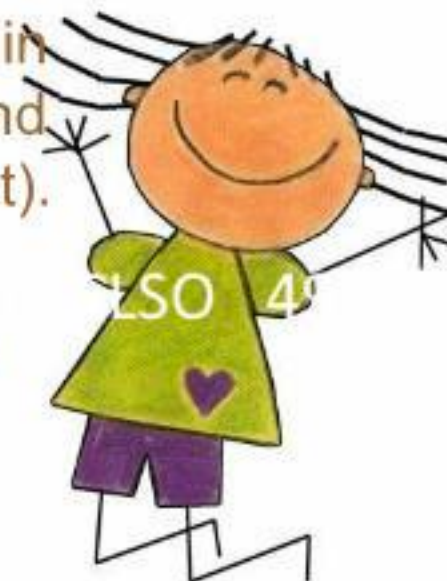
- Chart Review:
 - 52 pediatric patients (72 eyes) fitted with MSD lenses at Contact Lens Clinic of Farabi Eye Hospital between July 2010 and April 2019.



Lens characteristics:

Subjects were fitted from a trial set with the following parameters:

- Non-fenestrated MSD contact lens; diameter: 15.8 mm (Blanchard Contact Lens Inc., Manchester, NH).
- Sagittal vault ranging from 3.80 mm to 5.60 mm; each in four different profiles (decreased, standard, increased and double increased) and 2 different edges (standard/ 1+flat).
- Material: Boston XO DK/T: 100 (ISO/Fatt), 141 (gas to gas).



Fitting process:

- Sagittal height (mm), mid-peripheral clearance values (standard/decreased/increased/double increased) and edge angle (standard/ 1+flat) were determined by the same experienced practitioner during the fitting procedure.
- The ideal lens fit achieved with optimum corneal/limbal bridging and minimal blanching under haptic.



Results:

- 72 eyes of 52 pediatric patients were fitted with MSD lenses.
- The mean age of subjects was 12.96 years (range 4 to 18 years)
- 53.84% of patients were male.



Follow up

- Regular: 31 out of 52 patients
- The 40.3% who did not return for follow-up had not statistically different optical results.
 - 8 patients have gotten their lenses and are using it but are under the supervision of their local ophthalmologists
 - 7 patients are in the waiting list of getting their contacts
 - 2 patients preferred not to wait and returned to their referring ophthalmologists for considering another option,
 - 2 patients had socioeconomic barriers.
 - In one patient with end-stage ocular surface disease and low vision, we preferred not to prescribe the lenses as a result of low visual gain and difficulty handling.
 - Another patient with a history of the corneal graft because of keratoconus was intolerant to MSD lens; thus, we switched to a hybrid lens.



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	Patient	Eye	SAG	CCVA with MSD	Diff CCVA and BSCA	P value
49th ECLSO	49th ECLSO	49th ECLSO	49th ECLSO	49th ECLSO	49th ECLSO	49th ECLSO
	9th ECLSO	11th ECLSO	Range (min, max)	LogMAR Mean(SD; range)	LogMAR Mean(SD)	
KCN	19	29	4.20- 5.40 (4.80)	0.13 (0.20; -0.1- 0.9)	0.55 (0.5)	0.000
Trauma	16	16	3.80- 4.80 (4.40)	0.38 (0.51; -0.10- 1.60)	0.61 (0.57)	0.002
Ocular surface disease	15	25	4.20 -4.40 (4.40)	0.19 (0.21; -0.10- 0.76)	0.51 (0.51)	0.000
Corneal scar	2	2	4.60	0.55 (0.21; 0.4- 0.7)	0.3 (0.42)	NI
Total	52	72	3.80- 5.40 (4.40)	0.22 (0.32; -0.1- 1.60)	0.55 (0.56)	0.000



- *UCVA: FC at 2 m;
- *BSCVA: 2/10;
- *CCVA with MSD: 10/10

- Miniscleral contact lens in the left eye of an 11-year-old paraplegic boy with advanced keratoconus who had undergone contact lens assisted UVX (collagen cross-linking) because of his thin cornea.
- The patient had a history of neuroblastoma and chemotherapy started at 2 months of age



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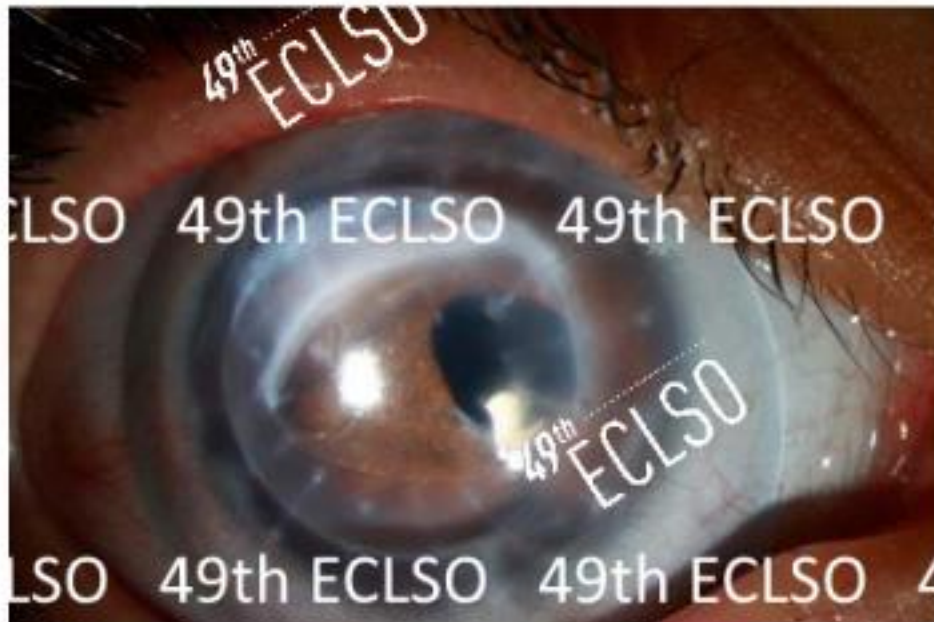
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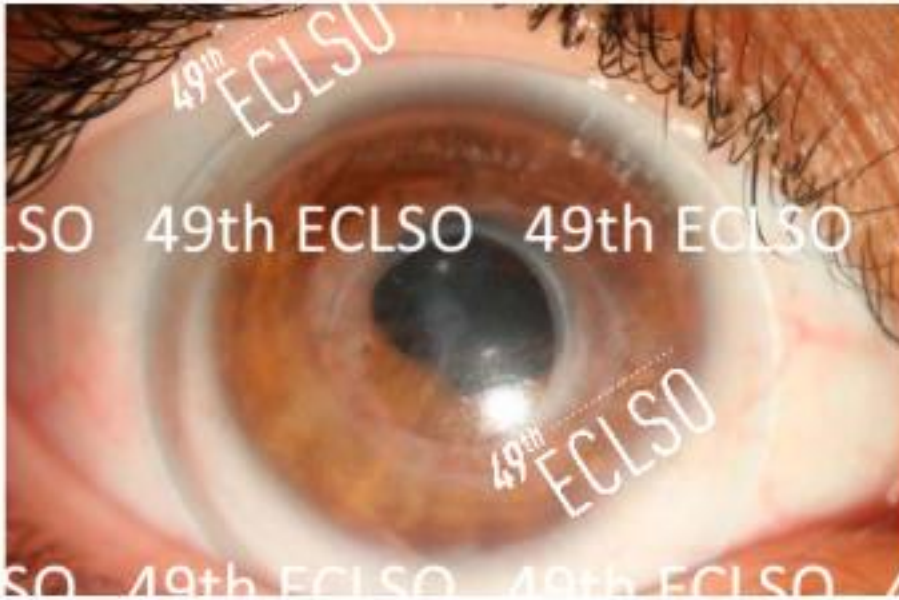
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- *UCVA: 2/10;
- *BSCVA: 2/10;
- *CCVA with MSD: 9/10

- The miniscleral design (MSD) lens on the right eye of a 8-year-old pseudophakic girl with an aphakic artisan lens and fullthickness rotational corneal graft
- Followed for 9 years.





- *UCVA: FC 1m;
- *BSCVA: 1/10;
- *CCVA with MSD: 5/10

- The right eye of a 9-year-old girl fitted with a miniscleral design (MSD) lens after penetrating keratoplasty.
- During follow-up course, the patient had a history of corneal neovascularization and infectious crystalline keratopathy (unrelated to contact lens) treated with intrastromal ceftazidime and subconjunctival bevacizumab, respectively



Conclusion

- Children (even as young as 4 years) can be successfully fitted and managed by mini SCLs and gain good results in long-term follow-up.
- Although handling and fitting mini SCLs are somehow challenging and need parental motivation, commitment, and rapport, most families are open to accept this option.
- The majority of children fully adjust to wearing SCLs.



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kind attention

