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Calibrated Prostho-Guide Conformer

A Revolutionary Advancement

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ABSTRACT

With children, ocularists experience tremendous amount of difficulty in quantitative adjustment / centeration of ophthalmic prosthesis. Generally transparent PMMA stock conformers (Fig.1) are installed during surgery and left in situ for 4-6 weeks to prevent socket from contraction. After healing of the wound, these patients are attended by an ocularist to take out the conformer and replace it with an artificial eye which requires repeated attempts to find out the correct centeration. Ocularists do not have anaesthesia facilities, and children, out of their instinctive fear would not let ocularist touch their operated socket. This postoperative fear generates non-cooperation. Very often it defeats the efforts of the ocularists to achieve a finer adjustment with the companion eye.

INTRODUCTION

After years of research by the authors in various proto type conformers, a new type of conformer has been designed and named as “Calibrated Prostho Guide Conformer” (Fig.2). This CPG Conformer is placed in ophthalmic socket during surgery for six weeks.

CPG Conformer accommodates itself in proper position in the socket, as such the coloured axis t-n marked on the Conformer positions on the nasal and temporal canthi. This coloured axis would indicate the exact position for the final quantitative adjustment of the prosthesis in proper position (Fig.3).

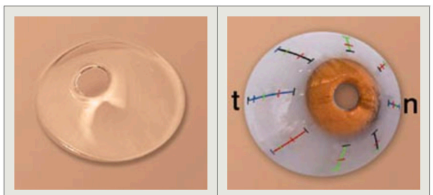

fig. 1 Transparent conformer | fig. 2 CPG conformer

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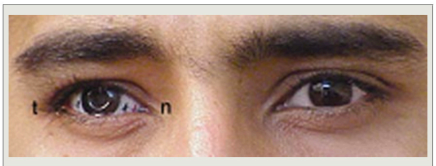

fig. 3 Guide conformer placed for prosthesis centration

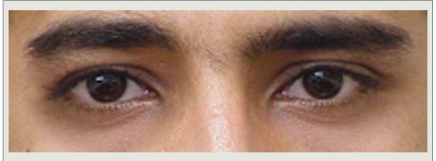

fig. 4 final prosthesis in situ

With this newly designed Conformer, it is possible to fit the prosthesis in first attempt (Fig.4), saving patients from lot of discomfort arising from repeated insertions to find the correct position. In addition, the CPG Conformer has following advantages:-

- It establishes the size, shape and the balance of the final cosmetic prosthesis in the socket.
- It radically reduces the time involved in quantitative adjustment of the prosthesis.
- It provides relief to the parents, as their child will not have to go through physical as well as mental stress due to painful manipulation of repeated insertions and adjustments.
- At the end of the surgery the surgeon can very easily visualize the final result of the prosthesis.
- While demonstrating to internees, the consultant can conveniently demonstrate the eye prosthesis and relate surgery to the internees while implanting CPG Conformer.
- For the training of ocularistry internees, the CPG Conformer will be a good tool in demonstrating the quantitative adjustments of the prosthesis.
- Due to variations in sockets the CPG Conformer will have different position in each case, this character will be a continuous source of self learning of centration adjustments of the prosthesis for any ocularist.
- Being opaque, the CPG Conformer will work as an artificial eye even during healing period especially in patients relatively more sensitive about their appearance.
- Patient himself can judge the extent of movement of his prosthesis as it becomes evident. This character of the CPG Conformer will boost patient’s morale and confidence.

MATERIALS AND METHODS

- Modified transparent polymer is blended with titanium oxide in a ball mill at low resolution to make it opaque.
- “Cross-Linked” ethylene glycol dimethacrylate monomer is added to homogenize with polymer to obtain “PMMA” paste, opaque in its characteristics.
- Opaque paste is subjected to “heat initiated polymerization” at 156 Psi for one hour at a consistent temperature of 100 °C to die-mould the scleral shell.
- A “PMMA” iris is fabricated and then cured into the shell.
- A 4mm diameter hole is drilled into the iris and the Conformer is then marked / calibrated along with 8 axis colour coded for easy identification.
- In the final stage the Conformer is annealed to extricate any residual monomer therein.

PHYSICAL PROPERTIES OF “CROSS-LINKED” PMMA

RESULTS

During the past 18 months, the CPG Conformers were used on 50 patients ranging 3-55 years in age at SIGHTS LAB and the following results were recorded.

Table 1: Data of Success rate recorded in different age group of various types of socket.

A	Specific Gravity	1.19 2
B	Molecular weight	High
C	Molecular structure	Non-porous
D	Physico-chemical Properties	Bio compatible
E	Odor	Nil
F	Color durability	Life Long/durable
G	Appearance	Like Prosthesis/near natural
H	Surface	Regular, smooth, glistening
I	Character	Non-abrasive
J	Conjunctiva! Erosions	None
K	Behavior	Non-irritant
L	Socket	Quiet
M	Cross-Infection	None
N	CPG Conformer	Inert

ypes of Socket	No. of Patients	Age (Yrs)	Success Rate
Enucleation	18	3-10	89 %
Evisceration	15	4-13	87 %
Shrunken lower fornics	5	12-20	60 %
Shrunken upper fornics	3	15-25	67 %
Re-constructive	5	20-55	60 %
Traumatic	4	10-50	50 %

DISCUSSION

Table 1 shows that, in 28 children between the ages 3-13 years, the ocular prostheses were fitted in first attempt whereas, in 6 patients of the same age group, it took two attempts for the proper fitting of the prosthesis.

In 3 children, it took three attempts before the eye prosthesis could be fitted to satisfaction.

In addition to children, 13 adult patients were also included in this study. The ophthalmic prostheses were fitted successfully in first attempt in all the 13 patients, which can be attributed to their ages, co-operation attitude and acceptance of an artificial device.

In patients with traumatic or re-constructive sockets the success rate is about 50%-60%. This may be due to mutilated tissues usually resulting from irregular socket. Whereas, in the remaining types of socket the success rate varied from 60%-89%.

In shrunken lower and upper fornices, the success was recorded at 60-67%. Most probably this success rate was a due to narrowing of the fornices.

The highest success rate i–e. over 85% was recorded is in enucleated and eviscerated sockets. This is a routine procedure with minimum mutilation and irregularity of the fornices.

CONCLUSION

Different types of conformers are being used by the surgeons, mostly the transparent3 one but CPG Conformer has not been reported earlier. The recent studies show use of coloured conformer.4 It serves as coloured prosthesis making it cosmetically more acceptable till the time an eventual prosthesis is fitted.

The latest addition of calibration on the coloured conformer makes subsequent adjustments of the final prosthesis quicker and easier as compared to existing procedures. It is far less traumatic, specially to the child patients, achieving more cooperation from them and providing a great relief to watching parents.

The results of this new CPG Conformer are highly encouraging. Therefore, it can safely be said that this CPG Conformer will be used successfully in all age groups.

STERILIZATION

- Korsolex basic
- E.T.O
- Pyodine
- Gamma radiation

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Practising Ocularist

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