

Do-it-yourself adapter for fundus examination with 90D and 78D lens

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The COVID-19 pandemic has brought a radical change in safety measures in outpatient clinics. The use of face masks by patients and healthcare workers has become a mandatory norm. Exhaled air with a face mask often follows an upward route. The warm exhaled air leads to fogging of 90/78D lens during fundus examination, hampering visualization. This can be prevented by the use of a simple yet innovative DIY adapter for a 90/78D lens, which can be made using simple household items such as PVC pipes or water hose pipes.

Key words: 78D, 90D, COVID-19, DIY

Access this article online

Website:

www.ijo.in

DOI:

10.4103/ijo.IJO_1986_21

Quick Response Code:



The coronavirus disease 2019 (COVID-19) has emerged as a global pandemic, threatening the health of patients and healthcare workers alike. The modes of transmission of coronavirus disease 2019 (COVID-19) include respiratory droplets, by contact with an infected person, and possibly via contaminated surfaces.^[1] One of the most effective ways to prevent viral spread is the use of face masks by patients and healthcare workers.^[2] However, with the use of loose face masks, the exhaled air follows an upward route, which may lead to dry eyes.^[3]

In addition, the warm exhaled air leads to fogging of the 78/90D lens when placed into position, making fundus examination difficult. This problem can be overcome by a simple yet innovative DIY adapter for the 90D/78D examination. The adapter acts like a barrier to prevent contact between the warm exhaled air and the lens surface, thereby preventing fogging of the lens surface during examination [Fig. 1a-d].

Innovation

The adapter is made out of a polyvinyl chloride (PVC) pipe. You need 1) a hacksaw blade to cut the pipe to desired size and 2) sandpaper to smoothen the edges. A 25-mm-diameter PVC pipe is required for the 78D lens (diameter = 31 mm), and a 20-mm-diameter PVC pipe for the 90D lens (diameter = 26 mm). The diameter of the PVC pipe might differ depending on the thickness of the

pipe. This pipe can be cut at a length of 20–25 cm using the hacksaw blade. The piece is then opened lengthwise. Edges of this adapter are smoothened with sandpaper, and the 78D lens is inserted [Fig. 2a–e]. For patients with prominent eyebrows, the adapter can be slightly modified by cutting the PVC pipe in such a fashion so as to remove the upper part of it [Fig. 3a–e]. Water hosepipe can also be fashioned into an adapter by cutting lengthwise [Fig. 1c].

Discussion

With the emergence of the COVID-19 pandemic, the safety of patients and healthcare workers has become of utmost importance. Ophthalmology practice has seen several innovations such as the use of smartphones for teleconsultation and slit-lamp breath screens to make examination safer in COVID-19 times. The 78D/90D adapter is one such simple yet innovative device to make fundus examination safer. The use of face masks remains one of the most effective methods to prevent the spread of the coronavirus. However, the use of facemasks significantly prevents the outward spread of exhaled air. The warm exhaled air follows an upward route, leading to fogging of the 78D/90D lens during the examination. This makes the fundus examination difficult. Although this can be prevented by asking the patient to lower the face mask below the nose, this will put the examiner at risk of contamination. The use of an adapter acts as a barrier to prevent contact between warm exhaled air and lens surface, thereby preventing fogging. The adapter can be made by

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Received: 27-Jul-2021

Revision: 24-Aug-2021

Accepted: 05-Oct-2021

Published: 27-Jan-2022

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Cite this article as: Fogla R, Gujar P, Law M. Do-it-yourself adapter for fundus examination with 90D and 78D lens. Indian J Ophthalmol 2022;70:653-4.

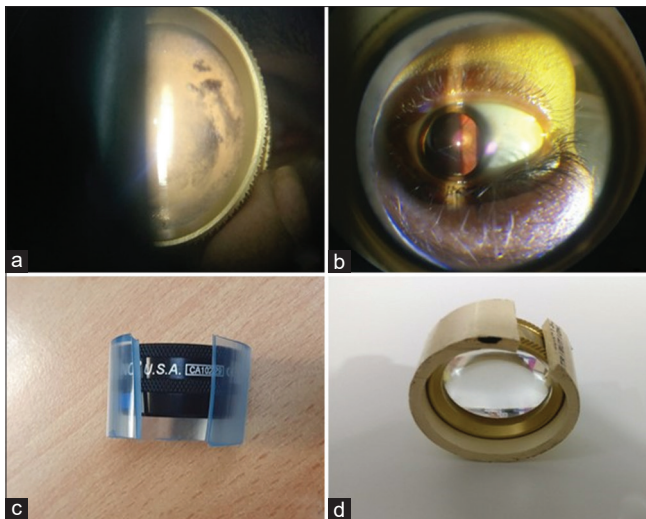


Figure 1: (a-d) Slit-lamp images showing DIY adapter preventing fogging of 90D lens. 90D adapter made using water hose pipe and PVC pipe

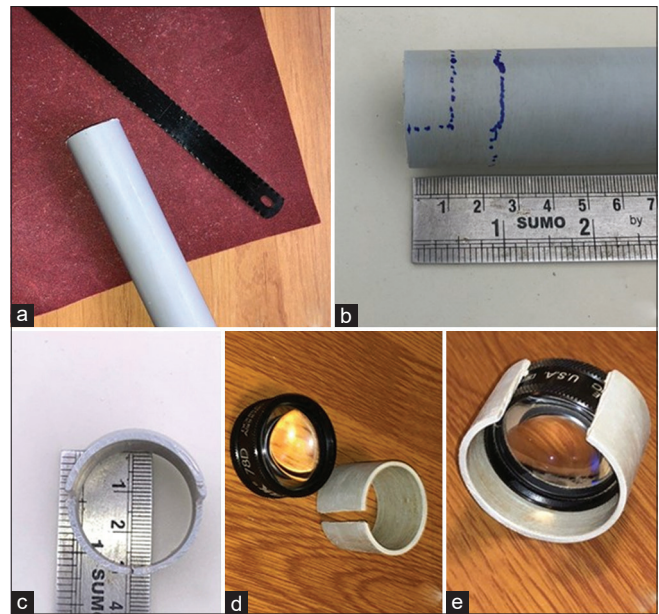


Figure 2: (a-e) Step-by-step guide to make 78D adapter using PVC pipe and hacksaw blade

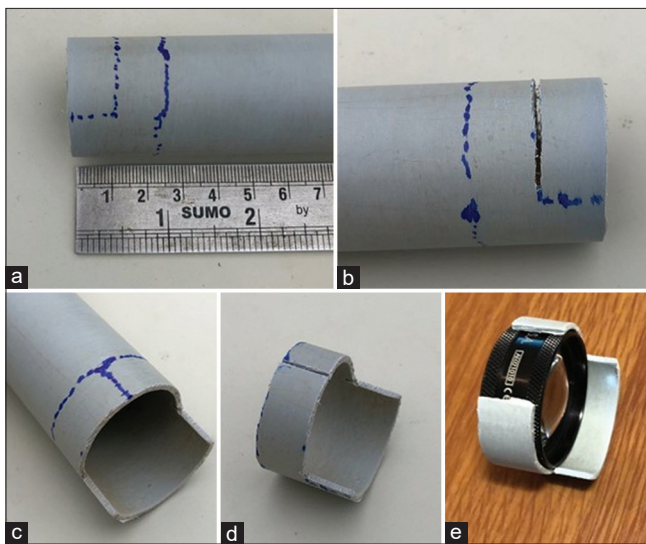


Figure 3: (a-e) Making 78D adapter for patients with prominent eyebrows

using easily available household items such as PVC pipes or water hose pipes.

Conclusion

The DIY 90D/78D adapter is an easy-to-make DIY device that makes fundus examination safer. It excludes the need of removing or lowering the patient's face masks during the examination.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

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