



PENCIL LEAD GRAPHITE FOREIGN BODY IN CORNEA – 2 CASE REPORTS

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ABSTRACT

Sharp tip of pencil leads can cause unique ocular injuries due to their size, shape and mobility from their surrounding mechanical effect. Although they are generally inert, they have been reported to cause severe inflammatory reaction and progressive damage to intraocular structures. We report two cases with penetrating impacted intracorneal graphite pencil lead foreign body in the anterior chamber of the eye with different presentations. One foreign body of 10 year duration was non-reactive and the other with 6 hour duration with acute inflammation.

Key words: Pencil Lead, Graphite, Corneal Foreign Body, Inert.

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INTRODUCTION

Among all open globe injuries, intraocular foreign bodies have been reported to constitute 18-41% [1]. Severe inflammatory reaction and infection is generally associated with organic foreign bodies, while the nature of reaction elicited by inorganic foreign bodies depends on the material of the foreign body [2]. Retained graphite foreign bodies in the eye are uncommon. The major component of pencil lead is graphite which has been reported to remain inert in the eye for a long time [3]. However, severe endophthalmitis - like reaction in the eye has also been reported by graphite [4]. Herein we report two cases with ocular trauma due to pencil lead injuries, associated post-operative and long term implications.

CASE REPORT 1:

A 18 year old school dropout girl from tribal area presented to emergency department of Sohar Hospital in

Sultanate of Oman. She was complaining of foreign body sensation and watering in her left eye. She gave history of pencil tip injury in her eye during early days of school 10 years back following which she was withdrawn from school.

On examination, her best corrected visual acuity (BCVA) was found to be 6/36 with severe astigmatism in left eye. On SLE, there was a graphite pencil tip foreign body impacted through limbus entering into cornea and partially projecting into the anterior chamber at 7 o'clock position [Figure 1]. There was no anterior chamber reaction, no evidence of any damage to any intraocular structures and the fundoscopy was normal. There was no evidence of past or present inflammation in the eye. The right eye was normal.

Foreign body was removed and corneal repair using 10-0 nylon was done [Figure 2]. Seidel's test of left

eye remained persistent post - operatively. Therefore, re-surgery was done by scraping and removing the remaining adherent graphite with tissue. Post-operatively, the patient was put on tapering doses of topical steroids, cycloplegic and antibiotics. On follow up one month later, the best corrected visual acuity in the left eye was 6/6 with astigmatism reduced to +1 at 90 degrees cylinder.

CASE REPORT 2:

A 11-year-old girl reported to the emergency department of RIO, PGIMS, Rohtak with complaint of foreign body sensation, redness, pain and watering in her left eye. The child's father gave a history of trauma with a graphite lead pencil about six hours ago at home when she was accidentally poked in the left eye by her younger brother.

On examination, her best corrected visual acuity was 6/9 in left eye and 6/6 in right eye. There was a retained graphite pencil tip of size approx. 2mm at 8 o' clock position impacted through limbus and cornea and partially projecting into anterior chamber [Figure 3]. On SLE, the cornea was clear with normal reacting pupil. Seidel test was negative with +2 cells in anterior chamber in the left eye. Fundoscopy was normal. The finding in right eye was normal. Surgical removal of the foreign body was done under GA. On Post-op day 1, the vision was 6/9 in left eye but with no astigmatism. IOP was normal digitally. Topical steroids and antibiotics were started and patient was kept on follow-up. On follow-up 3 weeks later, BCVA of both eyes was 6/6 and the anterior chamber reaction had subsided.

Figure 1: Showing the 10 year old retained graphite foreign body in the left eye at 7 o'clock position seen from the head end

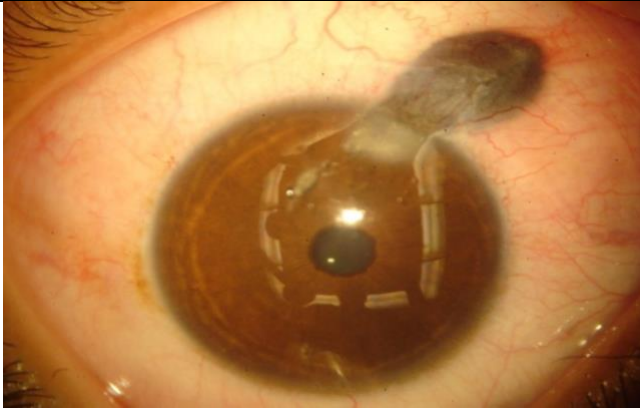


Figure 2: Showing corneal repair following foreign body removal

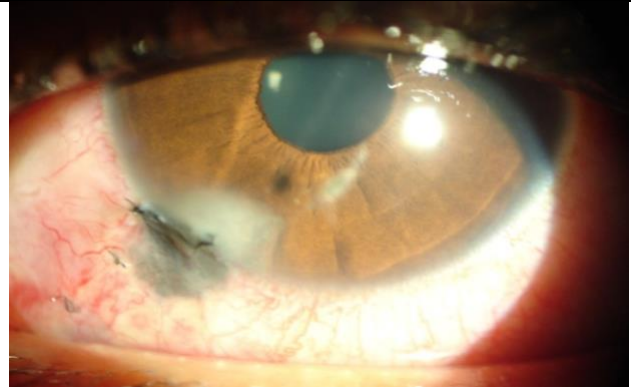
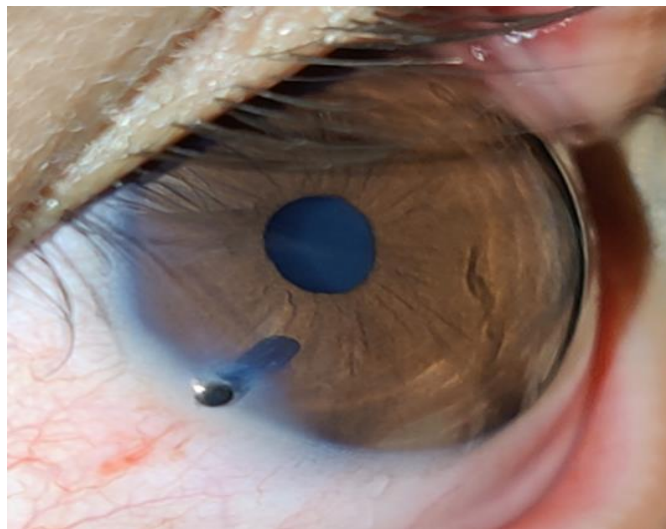


Figure 3: Showing impacted graphite pencil tip partially projecting into anterior chamber



DISCUSSION

Graphite pencils are made of graphite and clay, mixed with animal oils and fats, with a wooden surround [5]. There are not many reports of injuries to the eye and adnexa with graphite pencils although these are universally used in classrooms and homes across the world by young children [3,4,6]. In the reported cases of ocular injury with graphite pencil lead, eyelids and orbit are the commonly injured sites [3,7]. This could be due to protective “menace reflex”, where there is sudden closure of both eyes when an object is brought close to the eye and thus there is less chance of injury to the eye itself. There are only nine reports of injury to the eye with graphite pencil lead in literature [3,4]. Graphite is generally known to remain inert in the eye [3]. However, severe inflammatory reaction and endophthalmitis have been reported following graphite pencil lead injury. It has been suggested that the other components of the pencil like wood or aluminium may have been the cause of severe ocular inflammatory reaction in these cases [4]. There has only been one report of intracorneal graphite foreign bodies in literature.⁸ There is lack of data regarding ocular injuries with graphite pencil lead. Therefore, many such injuries go unnoticed and

unreported as the patients are often totally asymptomatic. In one of our case, the patient was totally asymptomatic for 10 years and had good visual acuity in the involved eye as the lead remained inert. The removal of the lead was done to prevent astigmatism. However, on rare occasions, graphite pencil lead injuries have been reported to cause severe ocular inflammatory reaction, as seen in our second case.

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None

CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

STATEMENT OF HUMANS AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

REFERENCES

1. Zhang Y, Zhang M, Jiang C, Qiu HY. (2011) Intraocular foreign bodies in China: clinical characteristics, prognostic factors, and visual outcomes in 1,421 eyes. *Am J Ophthalmol*, 152, 66-73.e.1.
2. Lit ES, Young LH. (2002) Anterior and posterior segment intraocular foreign bodies. *Int Ophthalmol Clin*, 42, 107-20.
3. Honda Y, Asayama K. (1985) Intraocular graphite pencil lead without reaction. *Am J Ophthalmol*, 99, 494-5.
4. Hamanaka N, Ikeda T, Inokuchi N, et al. (1989) A case of intraocular foreign body due to graphite pencil lead complicated by endophthalmitis. *Ophthalmic Surg Lasers*, 30, 229-31.
5. Nishimura Y. How to make pencil lead,” *Chemistry*, vol. 39, p. 401, 1984.
6. Han ER, Wee WR, Lee JH, and Hyon JY. (2011) A case of retained graphite anterior chamber foreign body masquerading as stromal keratitis,” *Korean Journal of Ophthalmology*, vol. 25, no. 2, pp. 128–131, 2011.
7. Nayar RC, Kanton RL, and Kingham JD. (1985) Graphite pencil as unsuspected intraocular foreign body. *Journal of Ocular Therapy and Surgery*, 4(4), 130–134.
8. Jeng BH, Whitcher JP, and Margolis TP. (2004) Intracorneal graphite particles. *Cornea*, 23(3), 319–320.

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