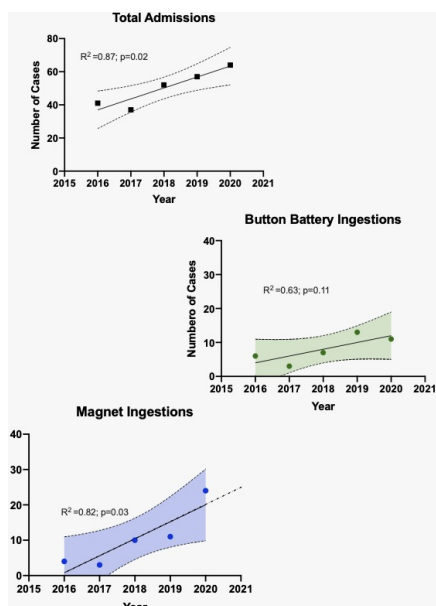


## Foreign body ingestion in children: a magnet epidemic within a pandemic

Foreign body ingestion is commonly seen in children aged 6 months to 4 years—a time when exploring their environment is key to their development. The majority of foreign bodies pass through the gastrointestinal tract without causing any injury and can be managed expectantly. However, certain objects might induce significant harm if not recognised and managed emergently. Coins have been reported to be the most commonly ingested foreign bodies in Western societies.<sup>1</sup> More recently, button batteries and neodymium magnets are increasingly being encountered, often with serious associated complications. The 2020 British Association of Paediatric Surgeons winter campaign was focused on button batteries and the life-changing complications they can cause.<sup>2</sup> Magnets commonly found in household toys also have the potential to cause serious injury. The Quadri-South East Paediatric Surgeons (QuadriSEPS) Group comprises four tertiary paediatric surgical centres: Evelina London Children's Hospital, King's College Hospital, St George's University Hospitals and the Royal Alexandra Children's Hospital. We have all witnessed a recent rise in magnet ingestion within our respective centres. Over a 5-year period between January 2016 and December 2020, we have admitted 251 children with foreign body ingestion. Coins were the the most common foreign body ingested (n=93, 37%), followed by magnets (n=52, 21%) and button batteries (n=42, 17%). There was a steady increase in the total number of admissions, with a 56% increase in cases from 2016 to 2020. Worryingly, there was a fivefold increase in the incidence of magnet ingestion during the same time period (figure 1). Only 1/42 (2.4%) of button batteries required surgery for




**Figure 1** Temporal association of foreign body ingestion during the study period.

retrieval, but 22/52 (42%) patients with magnet ingestions required either laparotomy or laparoscopy. Ten of 251 (4%) patients had surgical complications after retrieval of their foreign body. Magnet ingestions accounted for 8/10 (80%) of all complications encountered; and 4/6 (67%) of those were grade III or above according to the Clavien-Dindo Classification.

Within the UK, there is a statutory requirement as specified in the The Magnetic Toys (Safety) Regulations 2008, which requires all magnetic toys sold to be accompanied by a warning,<sup>3</sup> but most manufacturers do not display these. The age limit suitability on these toys is usually quoted to be  $\geq 14$  years. However, the median age of ingestion in our study for magnets was 7 years (4 months to 16 years). Single magnets usually do not require any intervention, but multiple magnets might attract each other from adjacent intestinal loops and entrap the intervening intestine, leading to necrosis and perforation.<sup>4</sup>

As a regional network of paediatric surgeons, we are extremely concerned with the recent rise in cases we have seen with foreign body ingestion and, in particular, magnets. This study has clearly demonstrated the growing problem with these objects and their associated morbidity. We recommend a strong public health campaign to increase awareness of the dangers of small, powerful magnets, especially those intended for toys, and to work

with manufacturers in clearly warning purchasers of the dangers for children.

**Hemanshoo Thakkar** <sup>1</sup>,  
**Katherine Mary Burnand**,<sup>2</sup> **Costa Healy**,<sup>3</sup>  
**Erica Makin**,<sup>4</sup> **Joseph Davidson**,<sup>1</sup>  
**George Bethell**,<sup>3</sup> **Hesham Elagami**,<sup>2</sup>  
**Alexandra Scarlett**,<sup>2</sup> **Shabnam Parkar**,<sup>2</sup>  
**Manasvi Upadhyaya**,<sup>1</sup> **Iain Yardley**,<sup>1</sup> On behalf of  
 the **Quadri-South East Paediatric Surgeons**  
 (**QuadriSEPS**) Group

<sup>1</sup>Department of Paediatric Surgery, Evelina London Children's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, UK

<sup>2</sup>Department of Paediatric Surgery, St George's University Hospitals NHS Foundation Trust, London, UK

<sup>3</sup>Department of Paediatric Surgery, Royal Alexandra Children's Hospital, Brighton, UK

<sup>4</sup>Department of Paediatric Surgery, King's College Hospital, London, UK

**Correspondence to** Hemanshoo Thakkar, Department of Paediatric Surgery, Evelina London Children's Hospital, Guy's and St Thomas' NHS Foundation Trust, London SE1 7EH, UK; hemanshoo.thakkar@gstt.nhs.uk

**Twitter** Hemanshoo Thakkar @Hemanshoo14

**Collaborators** Natalie Vallant, Ijeoma Nwachukwu, Abigail Khoo, Louise Murchison, Vanessa Albert, Esko Tahkola, Annita Budzanowski, Rahman Halim, Ionica Stoica, Farazi Virk.

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#### ORCID iD

Hemanshoo Thakkar <http://orcid.org/0000-0001-6259-7103>

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