



Little Magnets = Big Problem: Pediatric Magnet Ingestion

Presenters: Andrea Rock, Athos Bousvaros, M.D.,
and R. Adam Noel, M.D.
Moderator: Cindy Rodgers

Audio will begin at 3:00 PM ET.

You can listen through your computer speakers or call 866-835-7973



Meeting Orientation

- If you are having any technical problems joining the webinar please contact the Adobe Connect hotline at **1-800-416-7640** or email btriggs@edc.org
- Type any questions or comments into the Q&A box on the left.



Our Presenters



Athos Bousvaros



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NEODYMIUM MAGNET RISKS

Andrea Rock
Senior Editor

ConsumerReports[®]

NOT ORDINARY MAGNETS

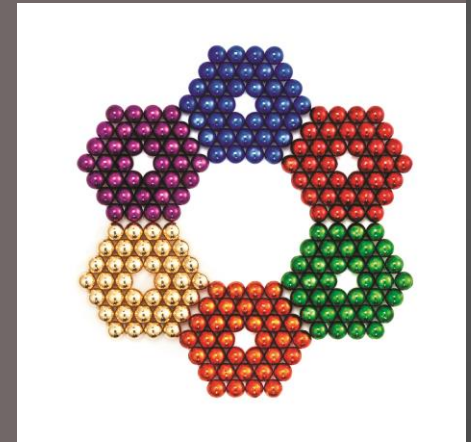
- ▶ Neodymium magnets first developed in 1982 for use in products including cordless power tools, MRI machines and hybrid electric car engines.
- ▶ Made with the rare-earth mineral neodymium, they can be 15 times more powerful than traditional magnets.
- ▶ Began to appear in toys. If more than one magnet is swallowed, they can bore holes in stomach or intestines, causing life-threatening complications.
- ▶ In 2009, after one death and dozens of injuries in children who swallowed magnets that detached from kids' building sets, Consumer Product Safety Commission created what became a mandatory safety standard requiring such magnets to be encapsulated if used in children's toys.

NEW MAGNET PRODUCT, NEW RISKS

- ▶ In 2008, when patents on rare-earth magnets had expired, new type of magnet product appears: Sets of small neodymium magnets marketed as adult “desk toys” or “stress relievers”.
- ▶ Typically sold in packages of 100 or more BB-sized balls that can be linked together. Easy for a few of these tiny balls to go missing without parents noticing.
- ▶ Neocube first to hit the market in 2008, followed in 2009 by Buckyballs and then others such as Magnet Balls, NeoBalls and Zen Magnets. Sold online or at retailers including Toys-R-Us, Barnes & Noble and Bed, Bath & Beyond.

ADULT PRODUCTS WITH KID APPEAL

- ▶ Even if they were intended for adults, magnetic balls looked like candy or toys, and they still were ending up in children's hands and mouths.
- ▶ CPSC tried to protect kids by requiring manufacturers to label the products for age 14 and older. Two manufacturers joined with the agency in a 2011 public education campaign warning about ingestion risks. Popular brands such as Buckyballs also included prominent warnings on product packaging.



AS INGESTION CASES INCREASE, DOCTORS CALL FOR ACTION

- ▶ Despite age labels and warnings, ingestion cases continued to rise, as millions of these popular magnet sets, each typically containing hundreds of high-powered magnetic balls, were sold.
- ▶ In June 2012, a group of 17 pediatric gastroenterologists met with the CPSC to urge the agency to take further action—including considering a ban on the sale of these products—to reduce the steady stream of serious injurious doctors were seeing, including the case described in this [Consumer Reports video](#):

NEW SAFETY STANDARDS PROPOSED

- ▶ CPSC proposed rules in September 2012 to set a strict safety standard for neodymium magnet sets, which could effectively ban them from the market. Both the American Academy of Pediatrics and NASPGHAN strongly support the proposal.
- ▶ Final version of proposed rules will be presented by the end of this month to the CPSC's Commissioners, who will vote on whether to implement them.
- ▶ Important to report any magnet ingestion cases to CPSC at SaferProducts.gov

Neodymium Magnet Webinar

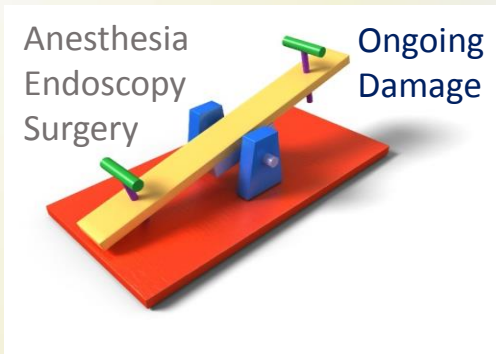
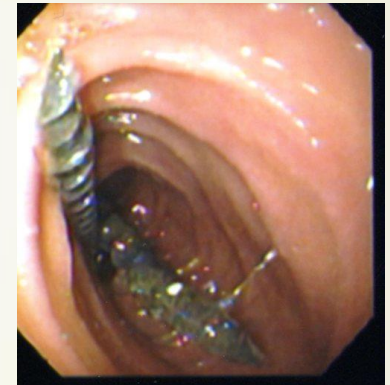
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Pediatric Gastroenterology
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The pediatric gastroenterologist and ingested foreign bodies

- Middle of the night call
 - Toddler or teenager has swallowed something
- Questions
 - Where is it? (esophagus, stomach, bowel)
 - What is it? (round vs. sharp, benign or caustic)
 - Do I let it pass (e.g. coin in stomach)?
 - Does it need surgery?
- Benefit vs. risk assessment

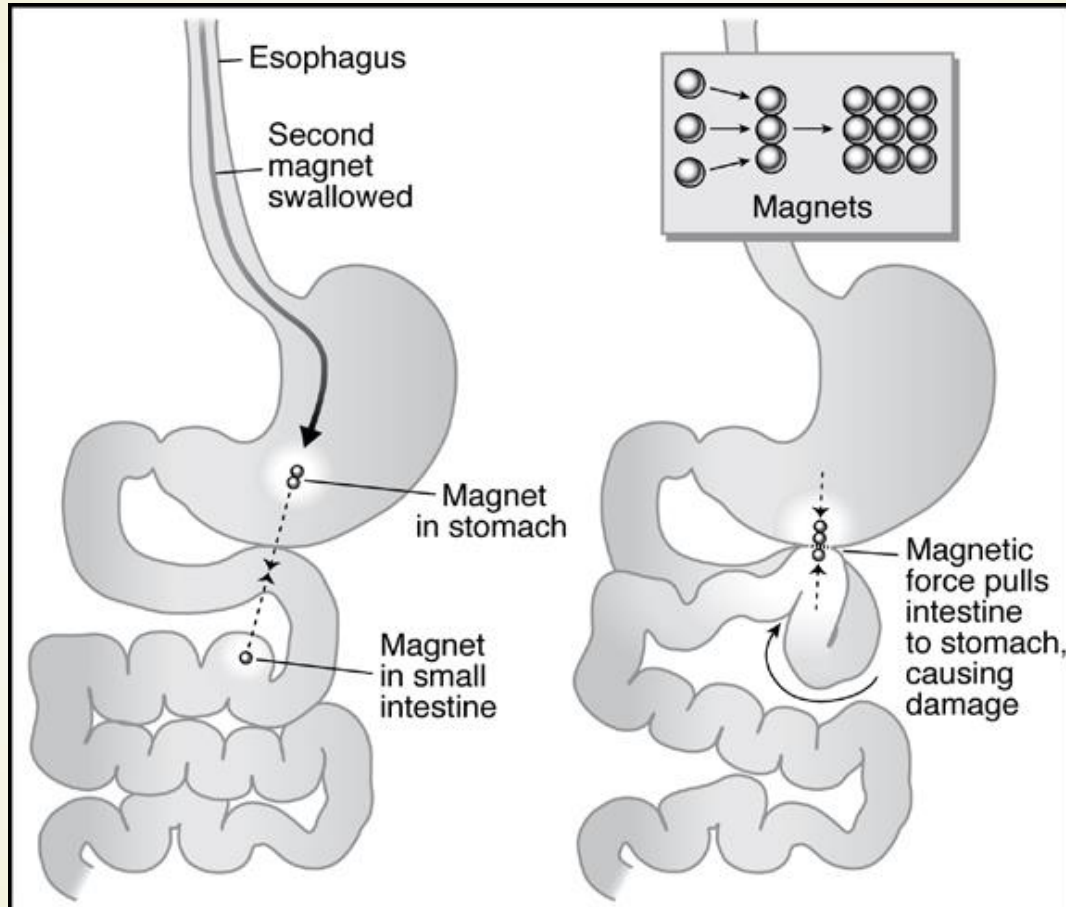


Neodymium magnets (Rare earth)

- Entered U.S market in 2008
- Sold under many names
 - Buckyballs
 - Neocube
 - Zen Magnets
- Marketed at adults
- Attractive to children
 - Infants and Toddlers
 - Put anything in their mouth
 - Teen
 - Mimics piercing
 - Tongue, lip



Magnet Ball Ingestion



Magnet Ingestion & Bowel Perforation

- If left too long, the bowel will perforate
 - Like a balloon, causing:
 - Fever
 - Pain
 - Serious infection



Magnet Ball Ingestion – 2 y/o

Feb 2012

- Swallowed 37 magnet balls
- Emergency surgery to repair a gastric fistula and 3 intestinal fistulas
- Look like candy (“dragées”), but they’re not.



Foreign Body Background

- The challenge for the clinician is to predict which objects will not pass, or pose risk of a serious complication that would warrant urgent or emergent removal
- American Association of Poison Control Centers
116,000 cases of foreign body ingestion in 2010
 - (86,426 \leq 5 year old)

Foreign Body General Background

- Perforation rate <1%
 - Increased in symptomatic patients 5%
- Accounts for ~1500 deaths/year in US
- Most pass spontaneously- 80-90%
 - Endoscopic removal - 10-20%
 - Surgical removal rare - ~1%

Neodymium Magnet Ingestion Chronology

- 2002 - isolated case reports
- 2006 - 20 cases of magnet ingestion and injury in children were reported in the Center for Disease Control's Morbidity & Mortality Weekly Report
- 2007 - The U.S Consumer Products Safety Commission (USCPSC) issued the first warning after the death of a 20-month-old-child, as well as 33 other cases of ingestion
- 2008 - USCPSC had documented more than 200 reports

The New Magnet Threat to Children

- 2008 - First “magnet toy” ball – NeoCube followed by Buckyballs in 2009
- 2008 - USCPSC documented more than 200 reports, many of those cases requiring emergency surgery to remove the magnets.
- 2009 - USCPSC issued a restriction on the sale of rare-earth magnets to children under age 14. After manufacturers failed to comply with proper labeling, a recall was ordered by the USCPSC on 175,000 packages.
- Between 2009 and 2012 one company increases sales from zero to 25 million dollars per year
- Between February 2012 to October 2012 Children’s Hospital in New Orleans had six cases of magnetic ball ingestions
- Spring 2012 informal pediatric GI bulletin board survey is done

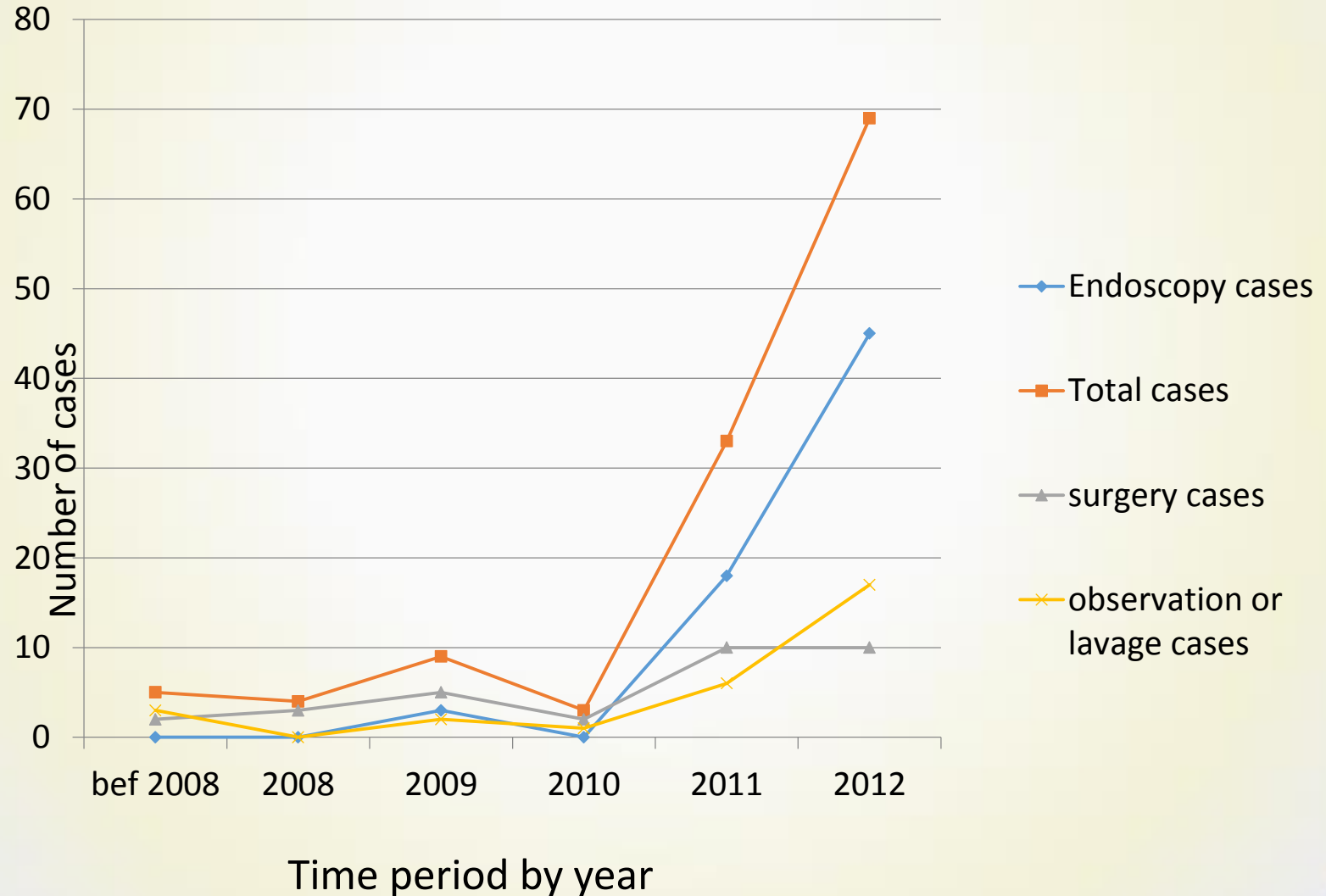
Informal Magnet Survey

- Spring 2012 - 39 pediatric gastroenterologists responding to an informal survey reported 93 cases of magnet ingestion (age 1-13 years, at least 372 magnets ingested)
 - 37 (83%) endoscopies with successful intervention 8 endoscopies with unsuccessful interventions
 - 30 (32%) surgeries (30 bowel perforations or fistulas, 11 reported near perforations or areas of pressure necrosis, 5 bowel resections)

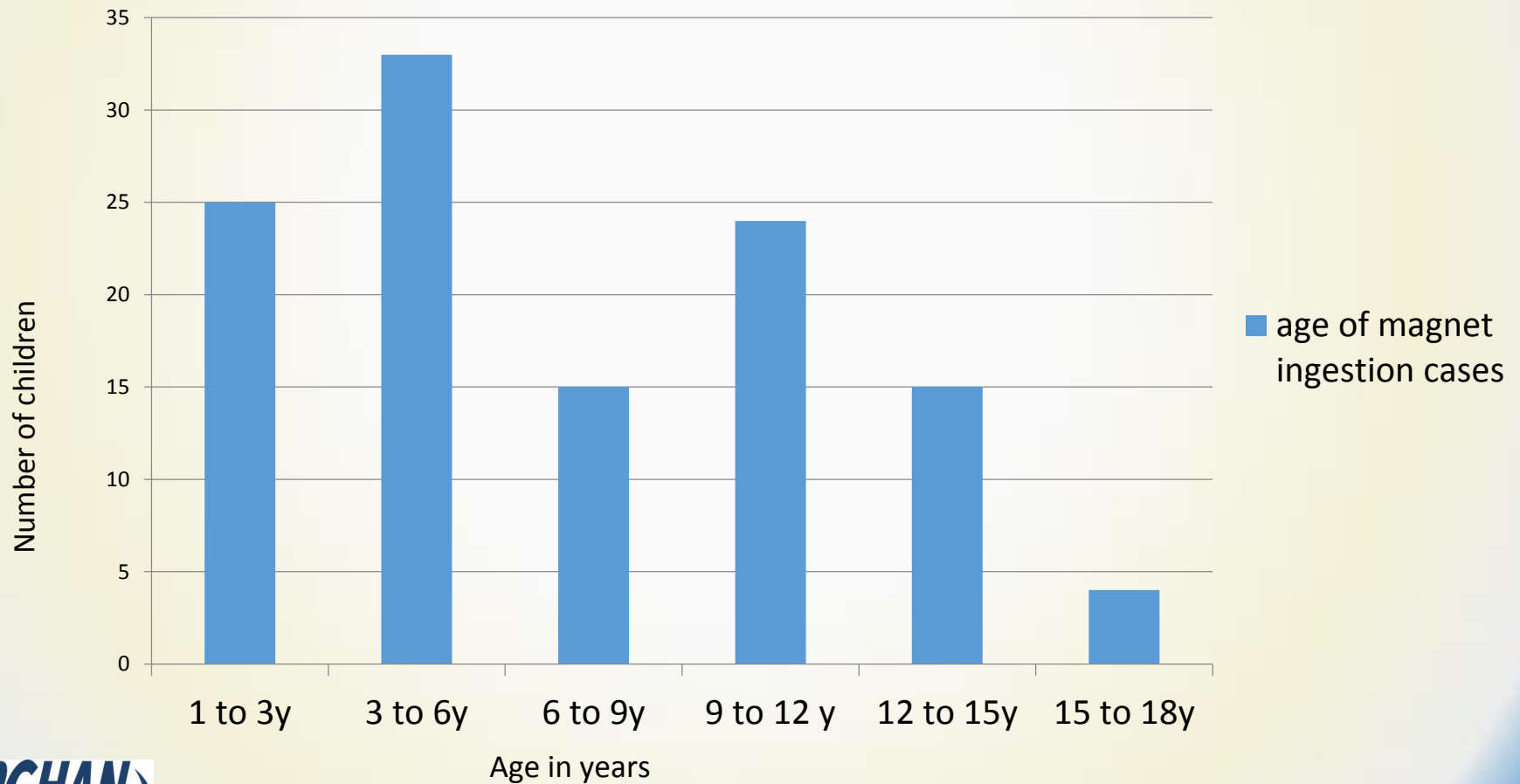
Magnet Ingestion Introduction

- Rare earth magnet ingestions have been a concern for pediatric gastroenterologists
- In the spring of 2012 the NASPGHAN bulletin board noted an apparent increase in cases
- The leadership at NASPGHAN determined a survey study was needed to document any changes in the frequency of cases and complications associated with rare earth magnet ingestion
- This study was approved by the LSUHSC IRB and was performed from 7/26/2012 until 10/10/2012

Change in magnet ingestions and various interventions



Age of children with neodymium magnet ingestions



Age and Sex of Children with Magnet Ingestions

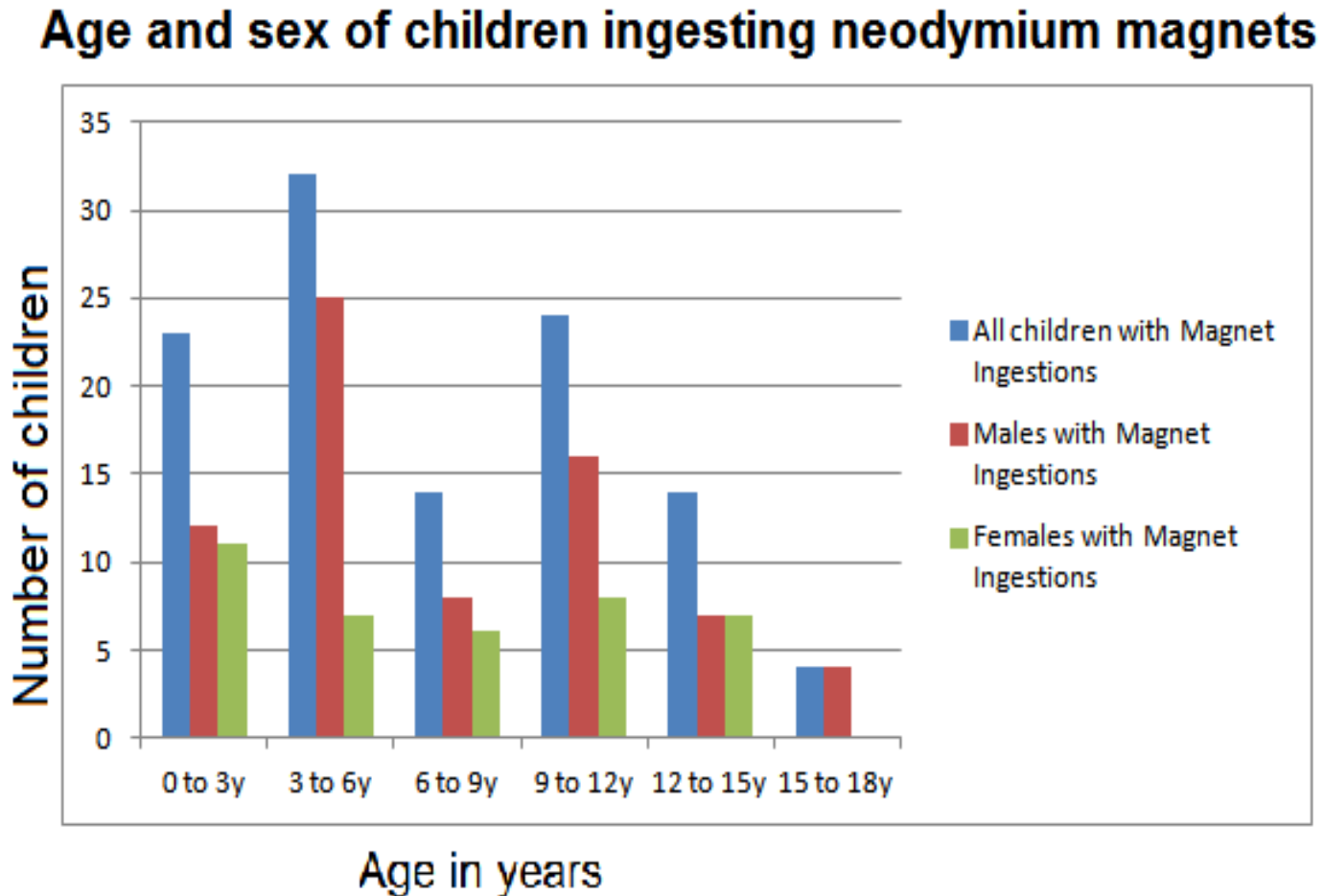
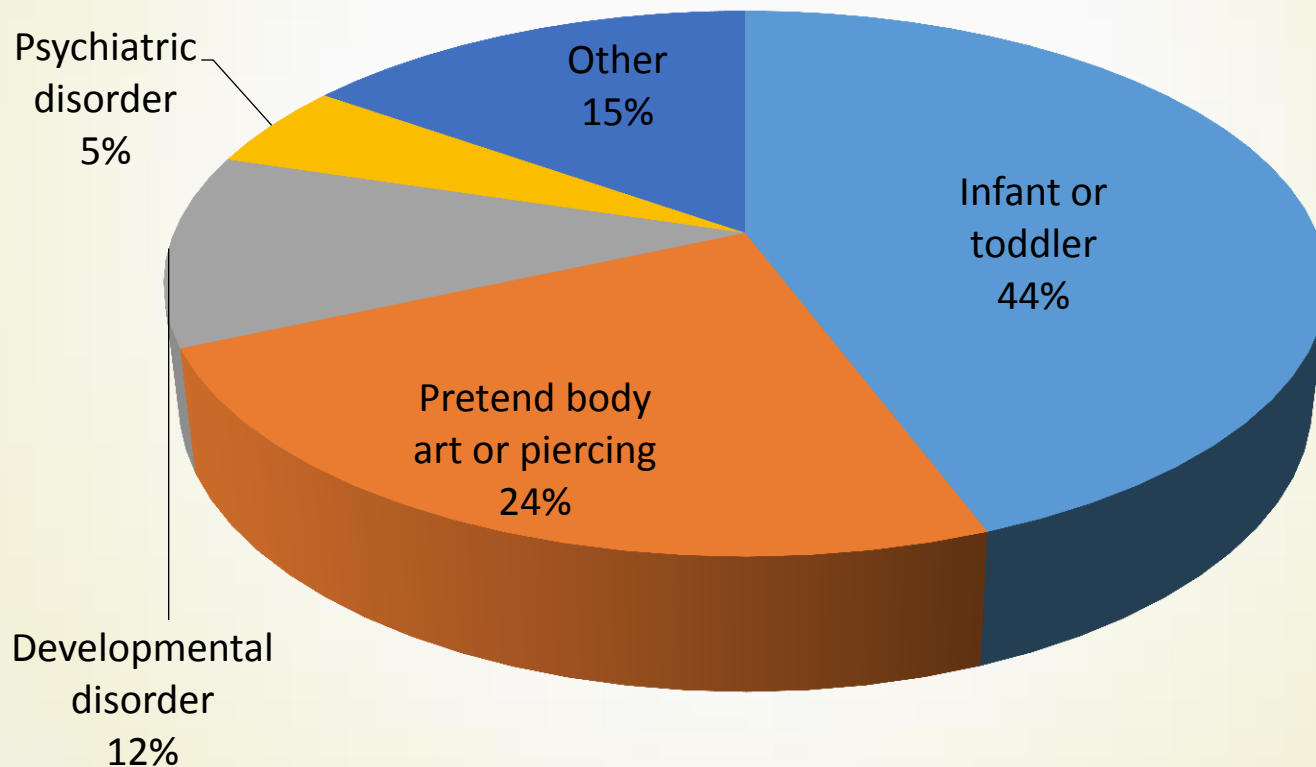


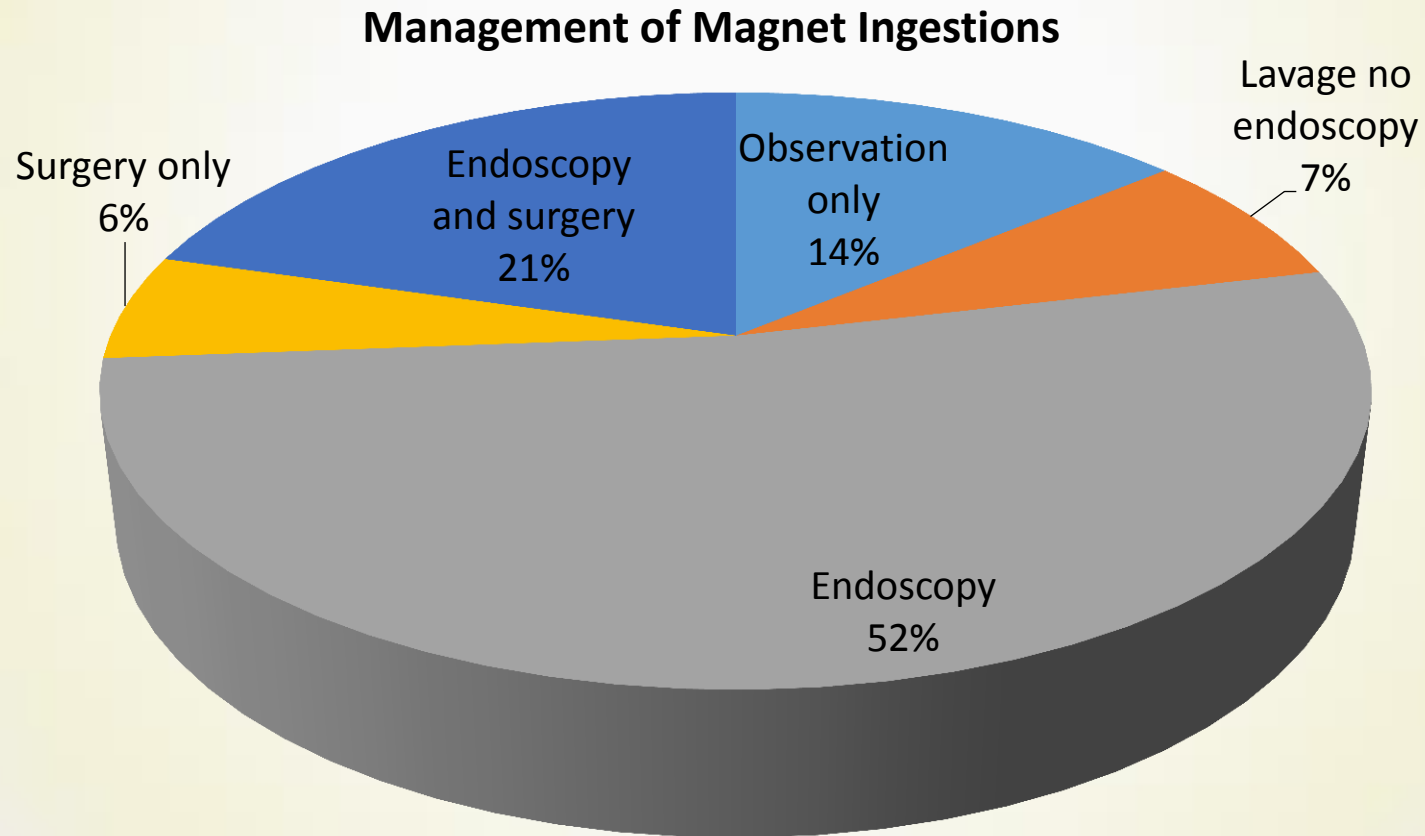
Figure 2: Distribution of all children and sex of children with neodymium magnet ingestions

Risk factors for Neodymium Magnet Ball ingestions

Risk Factors for Neodymium magnet ingestions

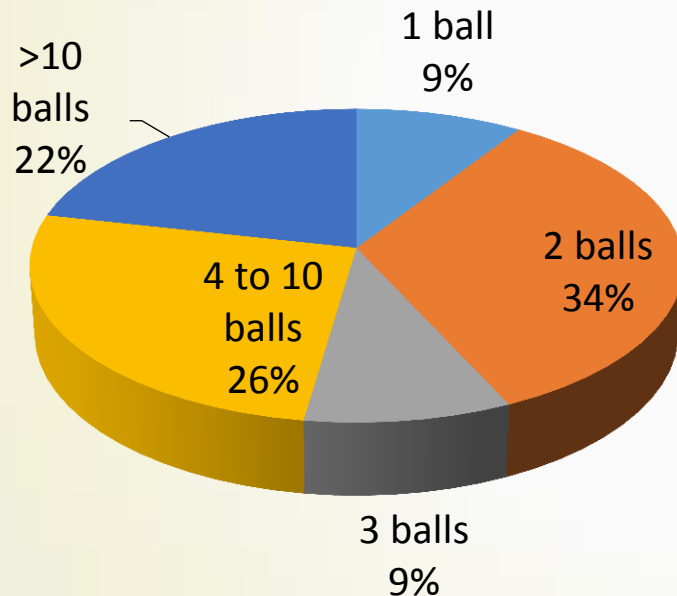


Clinical management of magnet ingestions

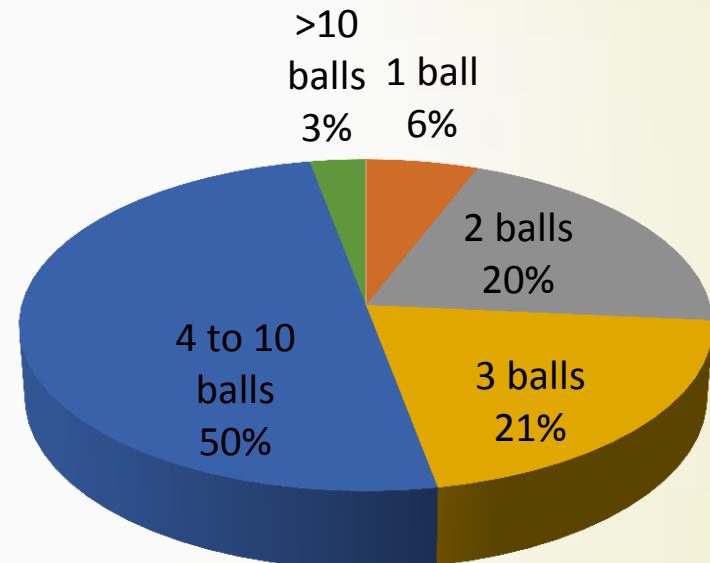


Comparison of number of magnet balls ingested and type of intervention

Magnet balls ingested at time of Endoscopy

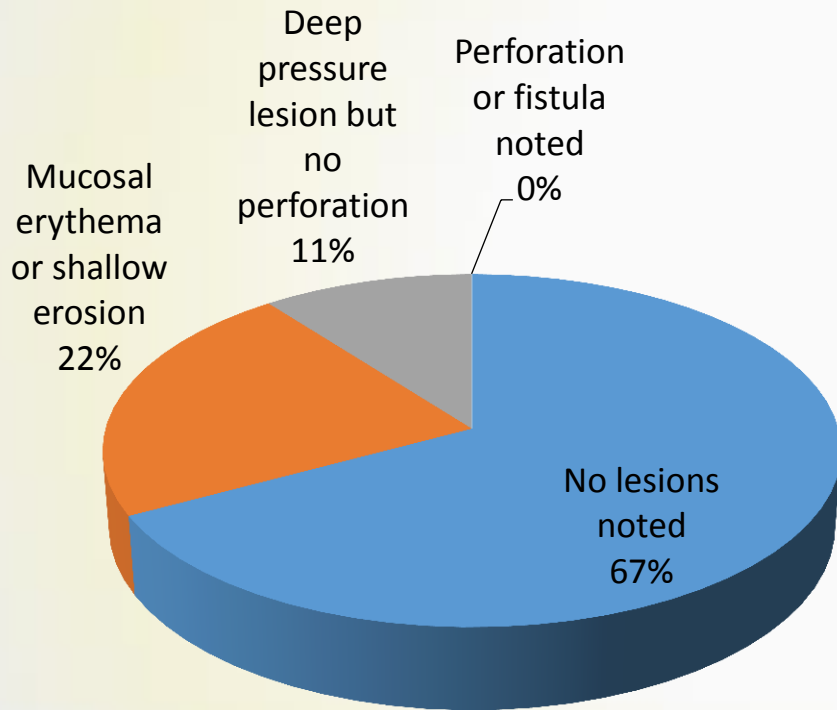


Number of magnet balls at time of surgery

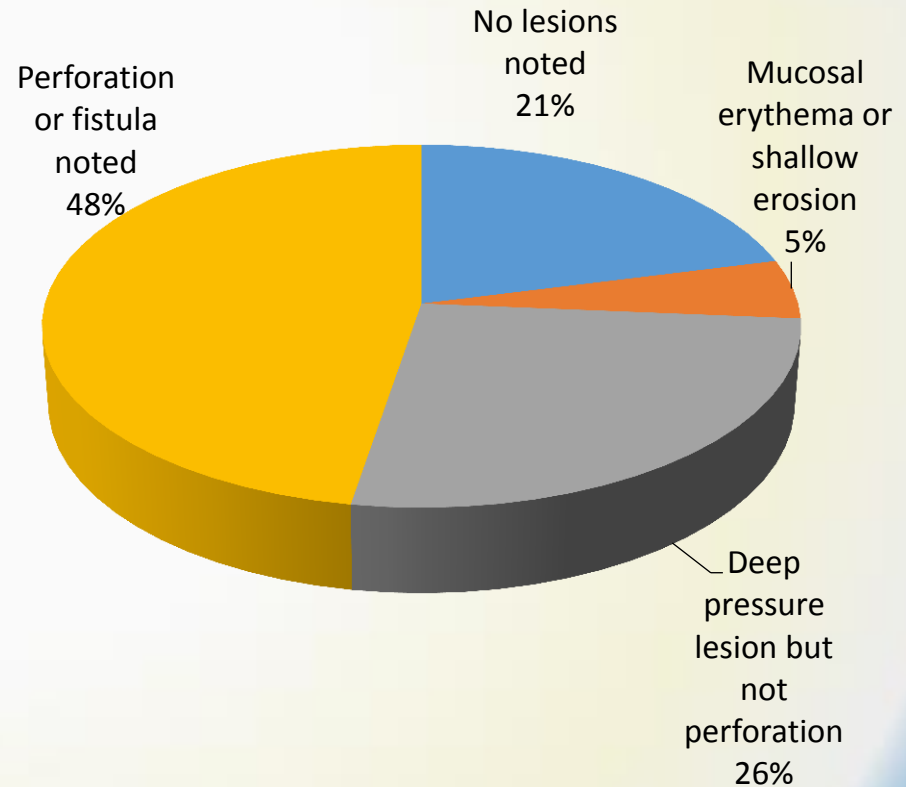


Findings at Endoscopy

Endoscopy only patients findings



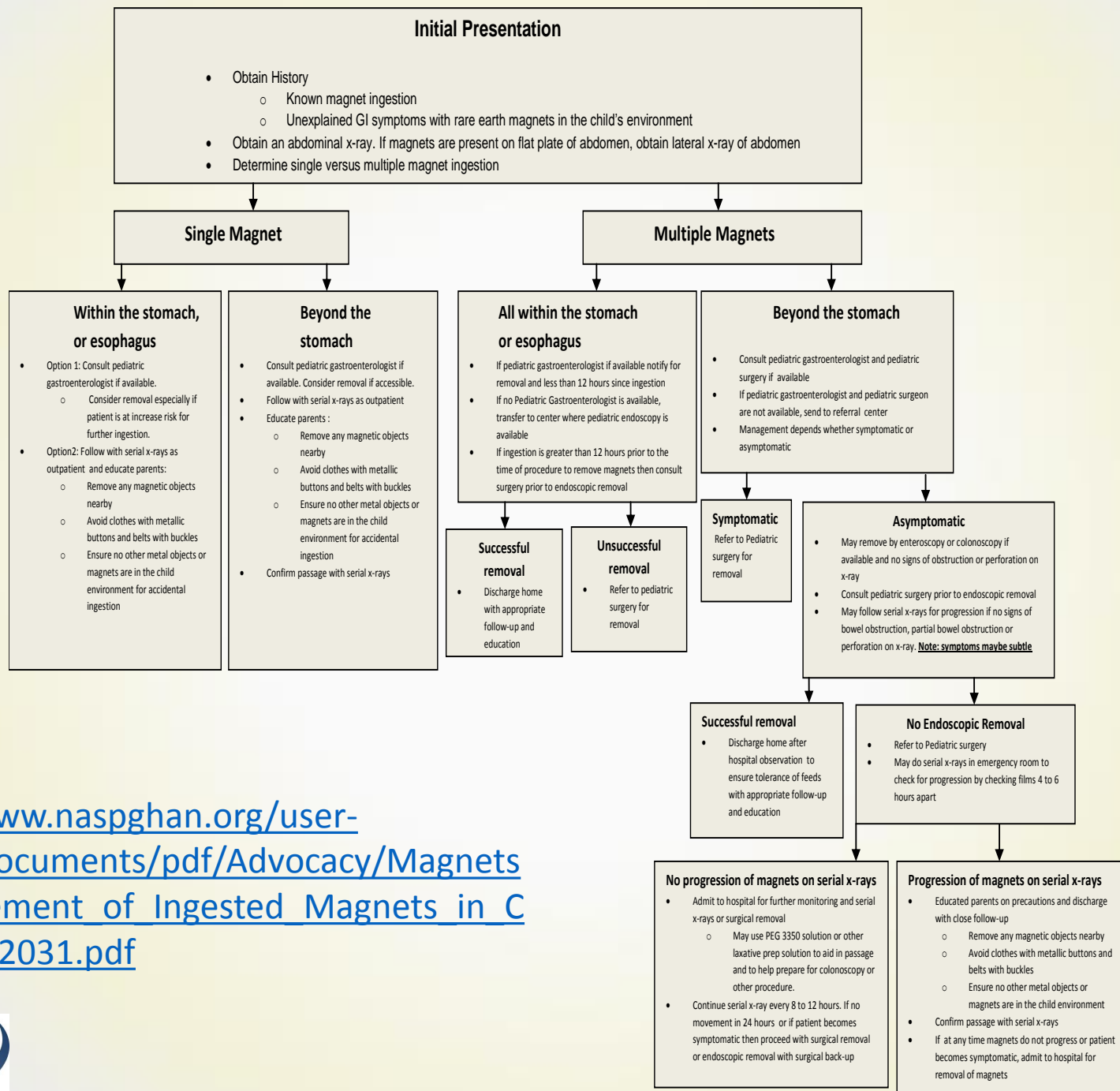
Endoscopy plus surgery patients findings



Surgical Interventions and Outcomes

- Magnet removal alone 31%
- Magnet removal and additional surgery 43%
- Single perforation or fistula repair 40%
- Multiple perforation or fistula repair 22%
- Bowel resection 16 %
- Appendectomy 3 %
- Overall 91% good short-term surgical outcomes 9% of case required long-term care

Preliminary NASPGHAN Rare Earth Magnet Ingestion Algorithm



<http://www.naspghan.org/user-assets/Documents/pdf/Advocacy/Magnets/Management of Ingested Magnets in Children%2031.pdf>

NASPGHAN Advocacy Efforts

- Meeting with the U.S. Consumer Product Safety Commission (USCPSC) Summer 2012
- Outreach to other societies (AAP, AGA, ACG, ASGE,
- Media alert (spokespersons) and Podcast
- July 2012- USCPSC came to an agreement with most manufacturers regarding voluntary recall except for Maxfield & Oberton and Zen Magnets which resulted in legal action
- National survey results were presented at the October 2012 AAP Meeting in New Orleans
- Maxfield & Oberton the following week says it will no longer manufacture the small rare earth magnet balls and cubes

NASPGHAN's Multi-pronged approach

- Educate our providers and public
 - Journal of Pediatric Gastroenterology and Nutrition
 - Professional education website - www.NASPGHAN.org
 - Patient education website – www.gikids.org
- Advocacy and Partnership
 - Consumer Protection Agencies – CPSC, Consumer's Union, ICHPSO
 - Physician Professional Organizations - AAP, ACG, SGNA, ASGE, ER physicians
- Gather more data
 - NASPGHAN member magnet survey
 - Encourage reporting of cases to the CPSC



A media “street fight”

**SAVE
+ OUR +
BALLS**
Buckyballs[®]

Use Promo Code **ThanksCPSC** to
Get Free Shipping on your order.
SaveOurBalls.net

**WARNING:
Warnings
Don't Work**

Coconuts can weigh up to 9 lbs and fall from heights of 80 feet (that's 8 stories)

That translates to a 50 MPH head blow from these all-natural projectiles

Approximately 150 people are killed every year from falling coconuts

Tasty fruit or deadly sky ballistics?

**Based On the CPSC's Logic,
Coconuts Should Be Banned.**

Buckyballs[®]

Should Mr. Wolfson join our CEO for an on-air debate AND help raise money for The American Cancer Society?

Call or email him to let him know your thoughts.

SCOTT WOLFSON
CPSC Director of Communication
swolfson@cpsc.gov
301.504.7051 (Direct Line)



“The Feds war on ... Buckyballs”

GI Kids

Help & Hope for Children with Digestive Disorders

Consumer Reports[®]

NIGHTLINE

End result

- Many manufacturers have withdrawn their product from the market
 - Some voluntarily
 - Some after retailers stopped selling them
- However, these magnets are still out there
 - In homes already purchased
 - Some manufacturers still sell them - Feb 2013
 - “*Zen Magnets* are fun to play with, look hot on girls...”
 - Imports and new products





zen magnets

- zen magnets
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Zen Magnets

zenmagnets.com/

Zen Magnets are small but curiously strong rare earth Neodymium super- magnets, 5mm in diameter. **Zen Magnets** are fun to play with, look hot on girls, go well ...

Buy

Zen Set - Mandala set - Buy Mini ZenMagnets.com - ...

Zen Set

The Zen set is the perfect balance between portability and ...

Contest ZenMagnets.com

Zen Magnets are small but curiously strong rare earth ...

[More results from zenmagnets.com »](#)

Mean

An open forum for responses and opinions regarding this ...

Gallery

New photos added daily. Add to this gallery at gallery ...

Buy Mini ZenMagnets.com

A Mini set is more than enough to begin experimentation with ...

Shop for zen magnets on Google



[216 Neodymium 5mm Magnets Character Sticker](#)
\$15.99 - eCrater



[Zen Magnets Original Set](#)
\$32.98 - Gift Grabber

[See more shopping results on Google](#)

Shop by price

[Up to \\$15](#) [\\$15 - \\$25](#) [Over \\$25](#)

Zen Magnets vs Buckyballs Comparison Video - YouTube



www.youtube.com/watch?v=S7Tka4NUmUo

Sep 22, 2010 - Uploaded by dethklok23

Zen Magnets response to their rival company. Comparison results in Buckyballs being second best to **Zen** ...

Impressive zen magnet. [VIDEO]



www.wimp.com/zenmagnet/

Mar 9, 2010

Impressive **zen magnet**. Prev · Random Video · Next · ATTENTION: This video will not play. You currently ...

[More videos for zen magnets »](#)

US Government Wants to Ban Zen Magnets

gizmodo.com/.../us-government-wants-to-ban-zen-magnets



by Sam Biddle - in 1,346 Google+ circles - More by Sam Biddle

Aug 7, 2012 - First they came for our Buckyballs. Now, or pretty-much-exact-same **Zen Magnets** are in Uncle Sam's crosshairs, with a lawsuit from the U.S. ...



- Home
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- Gallery
- 3D Video
- Contest
- Relations

Busy Federal CPSC says magnets should not be allowed; guns entrenched to knees.
 Uncompromising stance, mean sting, and no mind for democracy that disagrees.
SaveMagnets.com



Challenges for health care professionals

- How do we know what is dangerous?
- How do we track FB ingestions for children?
 - National ingestion registry for gastroenterologists
- How do we get our message out there to the public and to other professional societies?
 - Combat misinformation
 - Educate physicians and public about management



www.ulinxjewelry.com



Result of Initial Advocacy Effort

- On December 27, 2012 Maxfield & Oberton Holdings, LLC (the "Company") stopped doing business and filed a Certificate of Cancellation with the Secretary of State of Delaware, thereby ceasing to exist pursuant to applicable Delaware law
- On April 12 2013: The U.S. Consumer Product Safety Commission (CPSC), in cooperation with six retailers, is announcing the voluntary recall of all Buckyballs and Buckycubes high-powered magnet sets sold by these companies.
- CPSC continues to pursue legal action against Zen Magnets and the prior head of Maxfield and Oberton.

Magnet Conclusion

- Neodymium magnet ingestion cases increased in frequency 2008 to 2012. The ingestion of this toy is causing significant harm as demonstrated by the increasing number of children undergoing procedures for this problem
- We are taking active steps to educate doctors and the public on this problem (podcast, and news stories)
- We have developed an evaluation and treatment algorithm
- Not only is this toy causing physical harm but it is also causing an increase financial burden on our medical system by the high incident of procedures and hospitalizations associated with magnet ingestions
- Neodymium magnet ingestion is a preventable cause of morbidity and costly medical intervention to our children
- The present warnings on these toys have been ineffective, as noted by the increase in ingestion cases since 2008

Thank you





Questions?





Thank you for attending!

Please take a moment to take our survey about your webinar experience:

https://www.surveymonkey.com/s/magnets_Sept112013