



**Is it enough to use
rumen magnet once
a life to permanently
prevent hardware
disease in buffaloes?**



**By
Ashraf M. Abu-Seida**

**Professor of Surgery, Anesthesiology & Radiology
Faculty of Veterinary Medicine - Cairo University**



Introduction



Introduction

- Buffaloes are an important part of livestock agriculture in Asia since 5000 years, producing milk, meat, hides and draft power.
- Foreign body syndrome of bovine is still a matter of concern in different veterinary practices all over the world.
- Hardware disease is an alternative term for bovine traumatic reticuloperitonitis and sharp foreign body syndrome.





Introduction

Ingestion of a sharp object

↓

Settlement in the reticulum

↓

Irritation or penetration of the reticular wall

↓

Several complications.





Introduction



Traumatic Reticulitis



Traumatic Reticuloperitonitis (local and diffuse)



Reticular Abscess



Traumatic Pericarditis



Diaphragmatic Hernia



Vagal Indigestion



Hepatic Abscess



Splenic Abscess



Pleurisy and Mediastinal Abscess



Traumatic Pneumonia



Rupture of left gastro-epiploic artery



Introduction

The incidence of the disease is high in all developing countries as

Egypt

Iraq

India



Economic losses

Sharp drop in milk yield

Reduction in meat production



Economic losses

Treatment costs

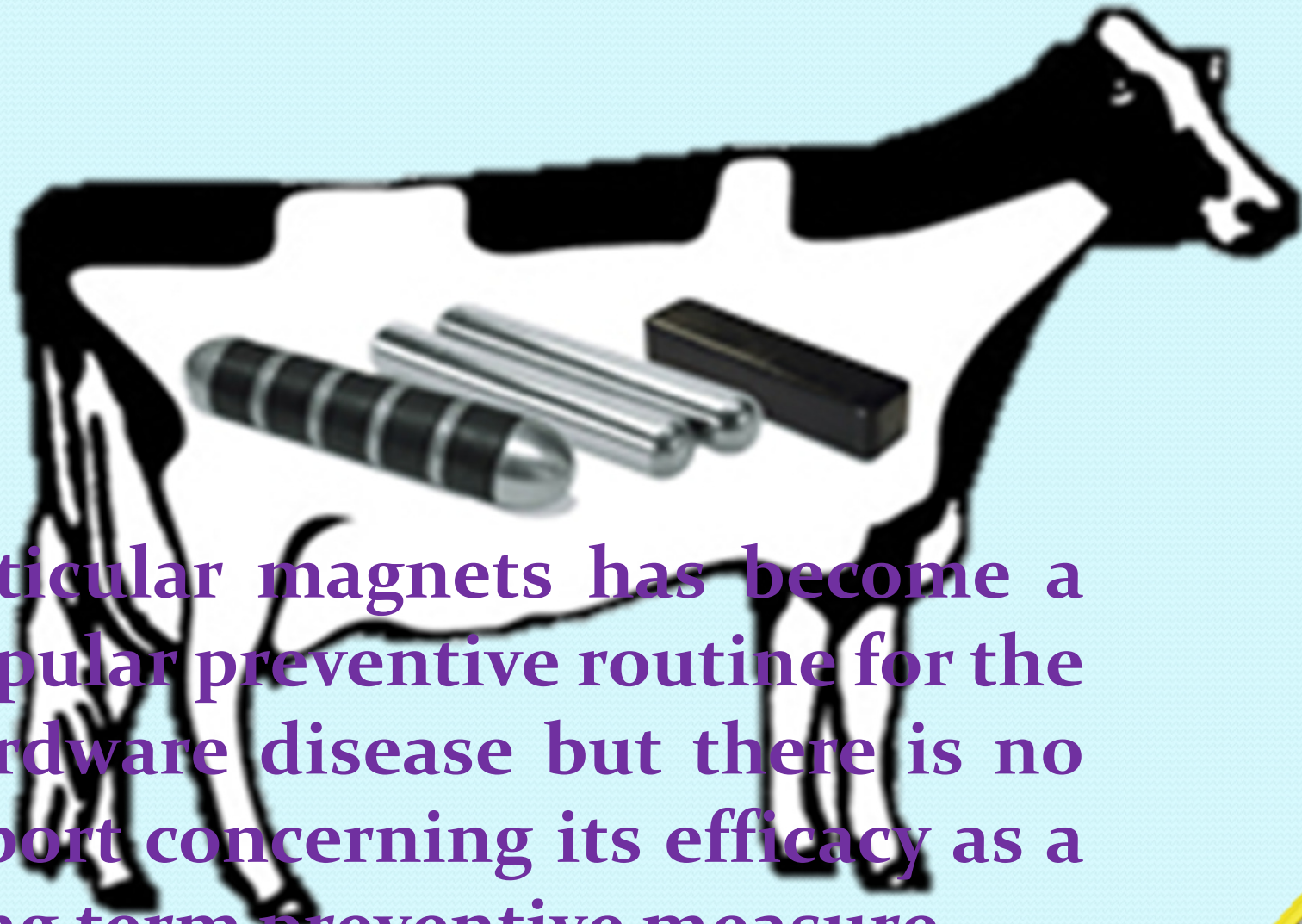
Potential fatalities

Fetal Losses





Introduction



Reticular magnets has become a popular preventive routine for the hardware disease but there is no report concerning its efficacy as a long term preventive measure



Aim of the study

Is it enough to use rumen magnet once a life to permanently prevent hardware disease in buffaloes?





Materials and Methods



Materials and Methods

- **Animals**

- 3100 buffaloes



- **Time of the study:**

- 8 years





Materials and Methods

Group I

- 1200 buffaloes suffered from hardware disease.

Group I

- Rumenotomy was carried out for these buffaloes and rumen magnet was dropped into the reticulum.

Group I

- Follow up for seven years was done. Repeated rumenotomy was carried out in all buffaloes that had recurrent hardware disease



Materials and Methods

Group II

- 1900 healthy buffalo heifers given prophylactic ruminal magnets orally at the age of 6-9 months

Group II

- These animals were followed up for seven years for any complications and possible occurrence of hardware disease

Group II

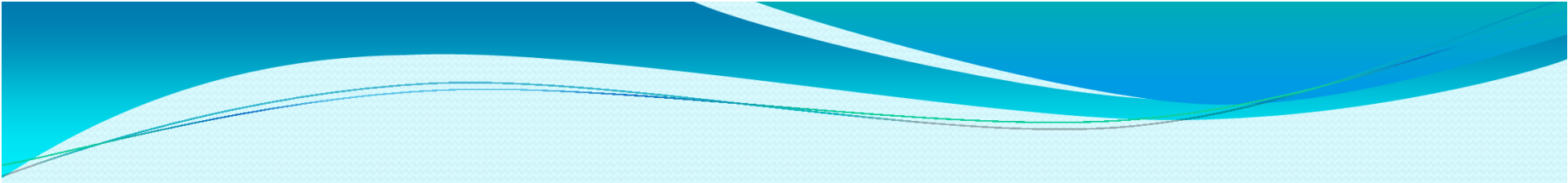
- Rumenotomy was carried out in hardware diseased buffaloes



Materials and Methods

Statistical analysis:

Proportions of buffaloes which developed hardware disease during the first 4 years and at 5 , 6 and 7 year after the use of magnet were compared using chi-square test in IBM SPSS (version 20) within and between group I and group II and all data were reported.



Results



Results

In group I:

- The affected animals were 1195 females and 5 buffalo bulls of 2-9 years old.
- No complications were reported after dropping of magnets into the reticulum
- Recurrent hardware disease was recorded in 110 animals representing 10.8% of the total examined buffaloes.



Results

In group II:

- Regurgitation was recorded in 1.5% of the total examined heifers.
- Hardware disease was diagnosed in 155 animals representing 8.9% of the total examined animals.



Results

- The incidence of developing a hardware disease during the first 4 years after the use of rumen magnet was 0% in both groups.
- Starting from 5th. year, a time dependent increase in the proportion of buffaloes developing a hardware disease was noticed in both groups



Results

Numbers of animals	Group I	Group II
Total examined buffaloes	1200	1900
Discarded buffaloes	185	154
Followed up buffaloes	1015	1746
Hardware diseased buffaloes during 1 ^{st.} – 4 ^{th.} year post magnet use	0 ^a	0 ^a
Hardware diseased buffaloes during 5 ^{th.} year post magnet use	23 (2.3%) ^b	35 (2.0%) ^b
Hardware diseased buffaloes during 6 ^{th.} year post magnet use	39 (3.8%) ^b	43 (2.5%) ^{b*}
Hardware diseased buffaloes during 7 ^{th.} year post magnet use	48 (4.7%) ^c	77 (4.4%) ^{c*}
Total hardware diseased buffaloes	110 (10.8%)	155 (8.9%)

Different alphabets indicate significant difference within the same group at $P < 0.01$

*Asterisks denote a statistical difference between groups at $P < 0.05$



Results



Complete filling of cage magnets with foreign bodies. The magnetic power of the retrieved reticular magnets was similar to the new one



Results

- The trapped metallic foreign objects included wires, nails, needles, knives, keys, coins, screws, rings, can-openers and iron pieces of various sizes.
- In addition, other non-metallic foreign bodies as bones, feathers, gravels, stones, sand, pieces of rubber, glass and clothes, shoes, ropes and plastic bags were also removed during rumenotomy.



Results



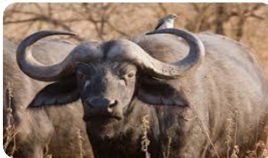
Traumatic Reticulitis (n=608)



Local Traumatic Reticuloperitonitis (n=461)



Reticular Abscess (n=191)



Diffuse Traumatic Reticuloperitonitis (n=96)



Traumatic Pericarditis (n=68)



Diaphragmatic Hernia (n=32)



Splenic Abscess (n=9)



Conclusions



Conclusions

- Administration of the rumen magnets is an effective prophylaxis for hardware disease in buffaloes.
- It is not enough to use rumen magnet once a life to permanently prevent this disease in buffaloes at high risk.
- Reapplication of a new magnet is recommended four years later.



Thank You