

APPLICATION OF NOVEL MAGNETIC MARKER LOCALIZATION-ASSISTED REAL-TIME NAVIGATION SYSTEM IN LAPAROSCOPIC PRECISION RESECTION OF EARLY INTESTINAL NEOPLASMS

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Poster

Colorectal

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A prospective randomized trial of 120 patients found that a novel magnetic marker navigation system achieved faster tumor localization (0.45 vs 5.42 minutes) and comparable R0 resection rates to carbon nanoparticle labeling in laparoscopic resection of early intestinal neoplasms.

KEY POINTS

- Both magnetic marker navigation (Group A, n=40) and carbon nanoparticle labeling (Group B, n=40) achieved 100% R0 resection rates, while unmarked controls (Group C, n=40) had 17.5% positive margins requiring re-excision.
- Magnetic marker localization was significantly faster than carbon nanoparticle method (0.45 ± 0.56 vs 5.42 ± 2.28 minutes, $P < 0.001$).
- Total operative time was reduced by 32.6% with magnetic navigation and 28.4% with carbon nanoparticles compared to controls ($P < 0.01$).
- The magnetic marker technique involved endoscopic implantation of three ferromagnetic markers in inverted triangular configuration 1 cm from tumor margins 24-48 hours preoperatively, with dual-modality intraoperative guidance.
- Study conducted September 2021 to September 2024 at Jilin University; results represent authors' assessment that magnetic navigation offers technical advantages for laparoscopic intestinal tumor resection.

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