APLIKASI FIBRIN GLUE TERHADAP PENINGKATAN KEPADATAN KOLAGEN DAN JUMLAH FIBROBLAS PADA ANASTOMOSIS KOLON PRIMER DENGAN KONDISI INFEKSI INTRAPERITONEAL (STUDI KELINCI *NEW ZEALAND*)

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ABSTRAK

Latar Belakang: Kebocoran anastomosis pada kolon menjadi salah satu penyebab morbiditas dan mortalitas yang tinggi pada pasien. Angka morbiditas dan mortalitas pada pasien dengan kebocoran anastomosis kolon berkisar 7–39%. Pada pasien dengan peritonitis yang dilakukan reseksi anstomosi pada kolon, angka kebocoran tersebut meningkat sampai 2,5 kali lipat. Penggunaan *fibrin glue* pada beberapa penelitian terbukti mampu memproteksi anastomosis kolon dengan meningkatkan produksi kolagen. Penelitian ini meneliti bagaimana peran fibrin glue dalam produksi kolagen dan fibroblas dalam keadaan infeksi intraperitoneal.

Metode: Penelitian merupakan penelitian experimental. Sebanyak 36 sampel kelinci New Zealand dikelompokkan menjadi 2 kelompok, yaitu kelompok perlakuan dan kelompok kontrol. Sampel dilakukan induksi infeksi intraperitoneal dengan injeksi fecal. Kemudian dilakukan pemotongan kolon dan dilakukan anastomose dengan jahitan terputus. Pada kelompok perlakuan, setelah penjahitan anastomose diberikan olesan fibrin glue pada anastomosis kolon, Pada kelompok kontrol luka langsung ditutup setelah anastomose kolon. Sampel jaringan anastomose diambil 7 hari setelah tindakan dan dilakukan pemeriksaan histopatologi kepadatan kolagen dan jumlah fibroblast.

Hasil: Pada penelitian ini didapatkan subjek penelitian yaitu kelinci sebanyak 36 ekor. Sebanyak 2 ekor kelinci mati, 1 ekor mati saat tindakan bedah, dan 1 ekor mati 1 hari setelah tindakan pembedahan. Didapatkan kepadatan kolagen 0 pada 4 subyek (23%), skor 1 pada 10 subyek (59%), dan skor 2 pada 3 subyek (18%) tanpa fibrin glue. Kepadatan kolagen skor 1 pada 8 subyek (47%) dan skor 2 pada 9 subyek (53%) dengan fibrin glue. Didapatkan perbedaan signifikan diantara kedua kelompok (α=0.05; p=0.031) dan OR sebesar 5.250 antara kelompok tanpa fibrin glue terhadap kelompok dengan fibrin glue. Pada jumlah fibroblast, diperoleh rerata 66.3 pada kelompok lem fibrin dan 58 pada kelompok tanpa lem fibrin. Didapatkan perbedaan signifikan diantara keduanya.

Diskusi: Aplikasi fibrin glue pada anastomosis pada keadaan infeksi intraperitoneal memberikan efek proteksi pada anastomosis tersebut, hal ini disebabkan karena sifat mekanis dari fibrin glue yang lengket dan kedap air, hal ini memberikan efek proteksi jaringan anastomosis dari invasi bakteri, sehingga proses pembentukan fibrin dan kolagen berjalan normal.

Kesimpulan: Didapatkan peningkatan kepadatan kolagen dan fibroblas jaringan anastomosis kolon pada keadaan infeksi intraperitoneal pada kelompok anastomose dengan aplikasi fibrin glue.

Keywords: lem fibrin, kolagen, fibroblas, anastomosis, infeksi intra peritoneal

APPLICATION OF FIBRIN GLUE ON INCREASING COLLAGEN DENSITY AND AMOUNT OF FIBROBLAST ON PRIMARY COLON ANASTOMOSIS WITH INTRAPERITONEAL INFECTION CONDITIONS (*NEW ZEALAND RABBIT STUDY*)

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ABSTRACT

Background: Leakage anastomosis of the colon become one of the causes of morbidity and mortality in patients. The morbidity and mortality rates in patients with colonic anastomosis leakage ranged from 7 to 39%. In patients with peritonitis with anastomosis of the colon after resection, the leakage rate increased to 2.5 times. From several studies the application of fibrin glue in anastomose colon under conditions of intra peritoneal infection can increase the number of fibroblasts and collagen density, but in other studies mentioned there is no significant difference in the application of fibrin glue & without fibrin glue in increasing number of fibroblasts & collagen density. The study is examining the role of fibrin glue in the production of collagen and fibroblasts in a state of intraperitoneal infection.

Method: The research is experimental. A total of 36 New Zealand rabbit samples were grouped into 2 groups, namely the treatment group and the control group. Samples were performed intraperitoneal infection induction with fecal injection. Then the colon was incised and anastomosed with interrupted sutures. In the fibrin glue group, after suturing, the anastomosis was given a smear of fibrin glue. In the group control of the wound immediately closed after anastomosis of the colon. Samples of anastomosis tissue were taken 7 days after the action and carried out for histopathology examination of collagen density and the number of fibroblasts.

Results: In this study, subjects were 36 rabbits. Two rabbits died, 1 died during surgery, and 1 died 1 day after surgery. The obtained density of collagen 0 in 4 subjects (23%), a score of 1 in 10 subjects (59%), and a score of 2 on 3 subjects (18%) without fibrin glue. The collagen density was a score of 1 in 8 subjects (47%) and a score of 2 in 9 subjects (53%) with fibrin glue. Significant differences were obtained between the two groups ($\alpha = 0.05$; $p = 0.031$) and OR of 5,250 between the groups without fibrin glue to the group with fibrin glue. On the number of fibroblasts, obtained an average of 66.3 in the group glue fibrin and 58 in the group without glue fibrin. It was obtained a significant difference between the two.

Discussion: Application of fibrin glue in the anastomosis on the state of infection intraperitoneal give effective protection on the anastomosis which is caused by the mechanical properties of fibrin glue that is sticky and impermeable to water, these features give protection of anastomosis tissue from invasion of bacteria so that the process of fibrin formation and collagen run normally.

Conclusion: It was found an increase in the density of collagen and fibroblasts tissue anastomosis of the colon on the state of intraperitoneal infection in groups with the application of fibrin glue.

Keywords: fibrin glue, collagen, fibroblasts, anastomosis, intraperitoneal infection