

Intisari

Celah palatum merupakan kelainan kongenital yang umumnya ditatalaksana dengan palatoplasti. Insisi lateral pada palatoplasti dapat membentuk jaringan parut pascaoperasi yang dapat menghambat pertumbuhan maksila dan mengganggu proses penyembuhan luka. Sildenafil sitrat diketahui memiliki efek vasodilatasi dan angiogenik yang berpotensi memodulasi penyembuhan luka secara regeneratif. Penelitian ini bertujuan mengevaluasi pengaruh aplikasi topikal gel sildenafil sitrat 5% terhadap penyembuhan sekunder luka palatum berdasarkan lebar palatum, jumlah fibroblas, dan ekspresi basic fibroblast growth factor-2 (FGF2).

Penelitian eksperimental *in vivo* dilakukan pada tikus Wistar jantan (122 ± 5 g) dengan luka ekresi palatum terstandar. Hewan coba dibagi secara acak menjadi kelompok kontrol (gel karbopol) dan kelompok perlakuan (gel sildenafil sitrat 5%). Pengukuran lebar palatum dilakukan pada hari ke-56 pascaekresi. Evaluasi histologis untuk menghitung jumlah fibroblas dan analisis imunohistokimia untuk menilai ekspresi FGF2 dilakukan sesuai periode observasi yang ditetapkan.

Hasil menunjukkan bahwa aplikasi topikal sildenafil sitrat 5% secara signifikan meningkatkan jumlah fibroblas dan ekspresi FGF2 dibandingkan kelompok kontrol ($p < 0,05$). Tidak terdapat perbedaan bermakna pada lebar palatum hari ke-56 antara kelompok perlakuan dan *baseline* ($p > 0,05$), menunjukkan bahwa peningkatan sildenafil berpengaruh terhadap pertumbuhan maksila secara normal.

Disimpulkan bahwa aplikasi topikal gel sildenafil sitrat 5% meningkatkan penyembuhan luka secara regeneratif melalui peningkatan proliferasi fibroblas dan ekspresi FGF2 tanpa mengganggu pertumbuhan palatum, sehingga berpotensi sebagai terapi adjuvan pascapalatoplasti.

Kata kunci: sildenafil sitrat, fibroblas, FGF2, lebar palatum

Abstract

Cleft palate is a congenital anomaly commonly managed by palatoplasty. However, lateral incisions performed during this procedure may result in postoperative scar formation, potentially inhibiting maxillary growth and impairing wound healing. Sildenafil citrate, known for its vasodilatory and angiogenic properties, may modulate the wound healing process toward a more regenerative pattern. This study aimed to evaluate the effect of topical 5% sildenafil citrate gel on secondary palatal wound healing, assessed by palatal width, fibroblast proliferation, and basic fibroblast growth factor-2 (FGF2) expression.

An in vivo experimental study was conducted using male Wistar rats (122 ± 5 g) with standardized palatal excisional wounds. The animals were randomly assigned to a control group (carbopol gel) and a treatment group (5% sildenafil citrate gel). Palatal width was measured on postexcision day 56. Histological evaluation was performed to quantify fibroblast numbers, and immunohistochemical analysis was conducted to assess FGF2 expression at predetermined observation periods.

The results demonstrated that topical application of 5% sildenafil citrate gel significantly increased fibroblast proliferation and FGF2 expression compared with the control group ($p < 0.05$). There was no significant difference in palatal width was observed on day 56 between the treatment group and the baseline group ($p > 0.05$), indicating that sildenafil administration influenced maxillary growth in a normal manner.

In conclusion, topical 5% sildenafil citrate gel enhances regenerative wound healing by increasing fibroblast proliferation and FGF2 expression without impairing palatal growth, suggesting its potential as an adjuvant therapy following palatoplasty.

Keywords: sildenafil citrate, fibroblast, FGF2, palatal width