

# Prediktor skoring maturasi arteriovenous fistula brakiosefalika sebagai akses vaskular pada pasien hemodialisis; IOC-score proposal novel skoring sistem = Predictor scoring maturation arteriovenous fistula brachiocephalica as vascular access on hemodialysis; IOC-score proposal novel scoring system

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## Abstrak

Latar Belakang: Akses vaskular (AVF) adalah jalur kehidupan bagi pasien hemodialisis jangka panjang dan merupakan pilihan utama. Nyatanya kegagalan maturasi AVF yang tinggi merupakan masalah bagi pasien penyakit ginjal tahap akhir (PGTA). Penilaian faktor prediktor kegagalan maturasi yang mudah digunakan memberi informasi prediksi dalam menentukan prognosis. Sistem penilaian ini mencoba menerjemahkan faktor inflow, outflow dan conduit (IOC) menjadi angka yang membantu menilai secara kuantitatif hasil akhir resiko maturasi. Penelitian ini bertujuan untuk menggabungkan penilaian IOC untuk memprediksi outcome, dan mengembangkan sistem skoring IOC-Score pada prediksi maturasi AVF.

Metode: Didapatkan 177 pasien AVF brachiocephalica dengan studi kohort retrospektif pada pasien PGTA sepanjang tahun 2020-2021 yang memenuhi kriteria inklusi. Penilaian karakteristik pasien dan AVF memberi gambaran demografi, dan analisa regresi logistik mendapatkan kemaknaan statistik pada faktor prediktor yang signifikan.

Hasil: Delapan signifikan faktor komponen IOC: diameter arteri  $^3$ 3.85mm, diameter vena  $^2$ 2.45mm. Peak Systolic Velocity (PSV) arteri  $^3$  72.35, Volume Flow (VF) arteri  $^3$  72.35, VF vena  $^2$ 291.9, Intima Media Thickness (IMT) <0.29, stenosis draining vein dan stenosis vena central (masing-masing 1 poin). Skor IOC (maksimal 8 poin) signifikan memprediksi keberhasilan maturasi AVF ( $p < 0.001$ ). Skor IOC di dapatkan titik potong  $^3$ 4.5 menghasilkan risk ratio 62.85 (Interval kepercayaan/CI 95%: 23.31-169.48;  $p < 0.001$ ) dan probabilitas 96.8% untuk skor maksimal.

Kesimpulan: Inflow, Outflow dan Conduit meningkatkan prediksi outcome pada maturasi AVF, dinyatakan dalam skor prognostic IOC yang akurat, mudah, aplikatif dan terpercaya.

.....Background: Vascular access (AVF) as a "lifeline" on long term hemodialysis is still the primary choice. Fact there is still high rate of failure of arteriovenous fistula procedure is one of the obstacles in treatment of chronic kidney disease. Easy-to-use scoring inform physician to predict and help to decide the management. Scoring system attempts to translate inflow, outflow dan conduit (IOC) into a score, thereby allows quantification of maturation. Purpose of this study is to combine IOC factors to predict the outcome, and develop easy-to-use risk scoring system predict fistula maturation; IOC-Score.

Methods: Total 177 consecutive brachiocephalic fistulae were identified cohort retrospectively on 2020-2021. Numerous patient-and fistula-related demographics were noted. Cox regression analysis was used to identify significant factors predictive of fistula maturation, and significant variables weighted according to their hazard ratio.

Results: Eight significant factor IOC component: arterial diameter  $^3$ 3.85mm, vein diameter  $^2$ 2.45mm, arterial Peak Systolic Velocity (PSV)  $^3$  72.35, arterial Volume Flow (VF) $^3$  72.35, vein VF $^2$ 291.9, Intima Media Thickness (IMT)<0.29, stenosis draining vein and central vein stenosis (each 1 poin). The IOC-Score

(maximum 8 points) significantly predict fistula maturation ( $p < 0.001$ ). Cut of point IOC-Score  $\geq 34.5$  with risk ratio 62.85 (Confidence Interval/CI 95%: 23.31-169.48;  $p < 0.001$ ) dan probability 96.8% for maximum score.

Conclusion: Combination Inflow, Outflow and conduit improves the prognostic of outcome on fistula maturation, formulated in IOC-Score which is accurate, simple, applicable and reliable.