TIBBIYOT
TA'LIMI & INNOVATSIYALARI

O'ZBEKISTON RESPUBLIKASI
19 20
TOSHKENT TIBBIYOT AKADEMIYASI

Google scholar

PubMed MEDLINE

NIH U.S. National Library of Medicine National Institutes of Health | Advancing Health Through Knowledge



- 14.00.00 - Tibbiyot fanlari;
- 14.00.01 - Akusherlik va ginekologiya;
- 14.00.02 - Morfologiya;
- 14.00.03 - Endokrinologiya;
- 14.00.04 - Otorinolaringologiya;
- 14.00.05 - Ichki kasalliklar;
- 14.00.06 - Kardiologiya;
- 14.00.07 - Gigiena;
- 14.00.08 - Oftal'mologiya;
- 14.00.09 - Pediatriya;
- 14.00.10 - Yuqumli kasalliklar;
- 14.00.11 - Dermatologiya va venerologiya;
- 14.00.12 - Tibbiy reabilitologiya;
- 14.00.13 - Nevrologiya;
- 14.00.14 - Onkologiya;
- 14.00.15 - Patologik anatomiya;
- 14.00.16 - Normal va patologik fiziologiya;
- 14.00.17 - Farmakologiya va klinik farmakologiya;
- 14.00.18 - Psixiatriya va narkologiya;
- 14.00.19 - Klinik radiologiya;
- 14.00.20 - Tibbiy genetika;
- 14.00.21 - Stomatologiya;
- 14.00.22 - Travmatologiya va ortopediya;
- 14.00.23 - Hamshiralik ishini tashkil etish;
- 14.00.24 - Sud tibbiyoti;
- 14.00.27 - Xirurgiya;
- 14.00.28 - Neyroxirurgiya;
- 14.00.41 - Xalq tabobati;
- 14.00.35 - Bolalar xirurgiyasi;
- 14.00.34 - Yurak-qon tomir xirurgiyasi

№8-SON

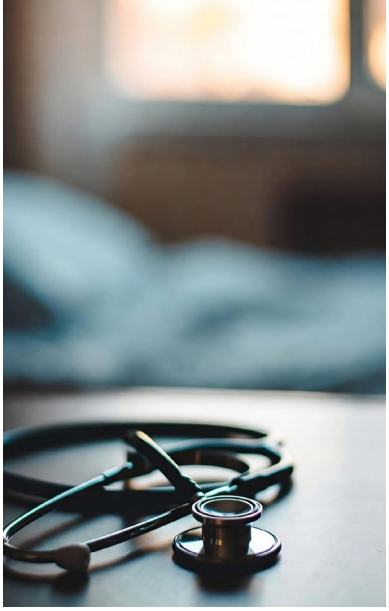
2026-yil, avgust

tibbiyot-talimi-va-innovatsiyalari.uz

https://t.me/tibbbiyot_2100

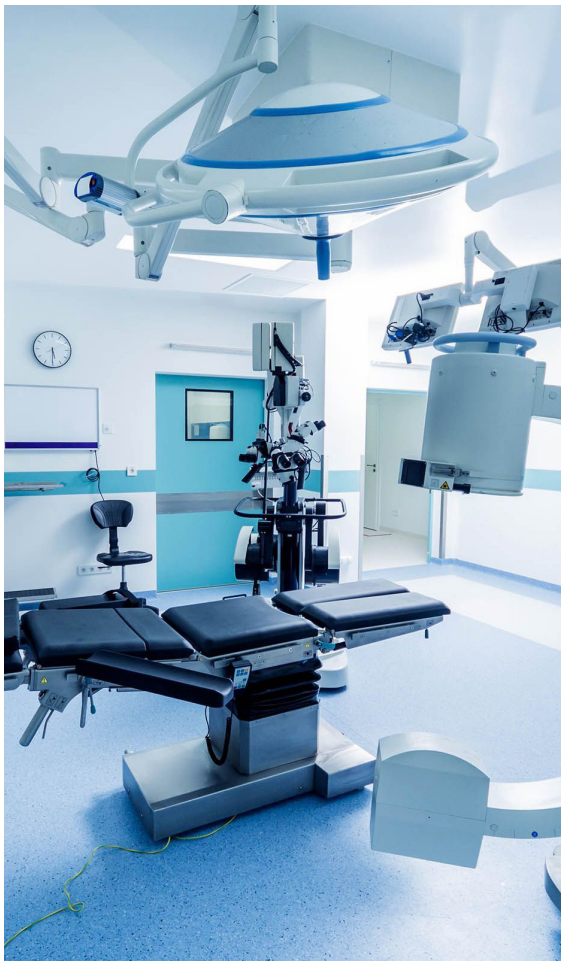
Litsenziya raqami: №745444













Tahrir hay’ati a’zolari:



BOSH MUHARRIR:
Shuhrat Baymuradov Abdujalilovich
tibbiyot fanlari doktori (DSc), professor



BOSH MUHARRIR O‘RINBOSARI:
Iminov Komiljon Odiljonovich
tibbiyot fanlari bo‘yicha falsafa doktori

“Tibbiyot ta'limi va innovasiyalari” ilmi elektron jurnali 29.04.2025-yildan O‘zbekiston Respublikasi Prezidenti Adminstratsiyasi huzuridagi Axborot va ommaviy kommunikatsiyalar agentligi tomonidan C-5669801 reyestr raqami tartibi bo‘yicha ro‘yxatdan o‘tkazilgan. Litsenziya raqami: №745444.

Tahrir hay’ati a’zolari:



Sharipov Kongratbay Avezimbetovich
Texnika fanlari doktori (DSc), professor



Ishanqulov Artiqboy Eshboyevich
Biologiya fanlari doktori (DSc), professor



Otamuradov Furqat Abdukarimovich
tibbiyot fanlari doktori (DSc), dotsent.



Shuxrat Jumayevich Teshayev
tibbiyot fanlari doktori (DSc), professor



Oral Aminovna Ataniyazova
tibbiyot fanlari doktori (DSc), professor



Jalolova Feruza Maxamatjanovna
Tibbiyot fanlari bo‘yicha falsafa doktori (DSc), dotsent



Uraqov Shokir Ulashovich
tibbiyot fanlari doktori doktori (DSc)

"TIBBIYOT TA’LIMI VA INNOVATSIYALARI"
ilmiy elektron jurnali O‘zbekiston Respublikasi Axborot va ommaviy kommunikatsiyalar agentligi (AOKA) tomonidan 2024-yil 9-oktabrdan boshlab c-5669651 raqami ostida rasmiy ro‘yxatdan o‘tkazilgan.

Murojaat uchun telefon:
+998 97 748 70 03
Email: @munis_sm

MUNDARIJA

ТОШКЕНТ ХАЛҚАРО МОЛИЯ МАРКАЗИ ВА СОҒЛИҚНИ САҚЛАШ ТИЗИМИНИ РИВОЖЛАНТИРИШ: ЯНГИ ҚОНУННИНГ АҲАМИЯТИ 12
Шуҳрат Боймуротов

IMPROVEMENT OF THE SURGICAL APPROACH TO THE TREATMENT OF CRANIOVERTEBRAL JUNCTION ANOMALIES ASSOCIATED WITH SPINAL MALFORMATIONS (CLINICAL EXPERIENCE) 17
Arzikulov Sh.T., Ismailova R.O., Jabborov N.I.

ARTERIAL GIPERTENZIYA VA 2 TIP QANDLI DIABET: PATOGENETIK BOG‘LIQLIKLAR VA GENETIK PREDISPOZITSIYA 25
Ellamonov Suxrobjon No‘mon o‘g‘li

БОЛАЛАРДА ПСОРИАЗНИНГ КЛИНИК-БИОКИМЁВИЙ, ИММУНОПАТОГЕНЕТИК ХУСУСИЯТЛАРИНИ ҲИСОБГА ОЛГАН ҲОЛДА КОМПЛЕКС ДИАГНОСТИКА ВА ТЕРАПИЯСИНИ ТАКОМИЛЛАШТИРИШ 32
Хаитов Кахрамон Нажмитдинович, Абидов Хасанходжа Алишерович, Махкамова Мухлиса Фархадовна

GLUTEN BILAN BOG‘LIQ SALOMATLIK XAVFLARI VA OZIQ-OVQAT NAZORATINING ZAMONAVIY YONDASHUVLARI: TANQIDIY ADABIYOTLAR SHARHI 48
Abdullaeva Dilafruz G‘ayratovna, Razikov Farrux Ibragim o‘g‘li, Abdullaeva Dilafruz G‘ayratovna

SLEEP AND CIRCADIAN RHYTHMS IN RELATION TO ANDROGEN STATUS IN MIDDLE-AGED MEN: CURRENT EVIDENCE AND CLINICAL IMPLICATIONS 58
Feruza Lyutpillayevna Azizova, Abdukhalim Kholiddin ugli Abdurakhimov

BOLALARDAGI NEYROGEN DEFORMATSIYALARNING UMUMIY KLINIK TAVSIFI VA ULARNI KELTIRIB CHIQARUVCHI OMILLAR TAHLILI 66
Xalimov Ravshan Jurabayevich

KESARCHA KESISHDAN KEYINGI UZOQ MUDDATLI ASORATLAR VA REABILITATSIYA STRATEGIYALARI (ADABIYOTLAR SHARHI) 70
Atayeva Farzona Nuriddinovna

KATTALARDA MODIFIKATSIYALANGAN INTRAMEDULLYAR VINTLAR YORDAMIDA KAFT SUYAKLARI SINIQLARINI KAM INVAZIV OSTEOSINTEZ QILISH 75
Xudoyorov Farhod Rustamovich

УСОВЕРШЕНСТВОВАННАЯ МЕТОДИКА ДИНАМИЧЕСКОЙ АНГИОНЕФРОСЦИНТИГРАФИИ ДЛЯ РАСШИРЕННОЙ КОЛИЧЕСТВЕННОЙ ОЦЕНКИ ФУНКЦИИ ПОЧЕК 85
Хикматов Акром Азимджанович

UDK 616.717.4-001.5-089.227.84

KATTALARDA MODIFIKATSIYALANGAN INTRAMEDULLYAR VINTLAR YORDAMIDA KAFT SUYAKLARI SINIQLARINI KAM INVAZIV OSTEOSINTEZ QILISH



Xudoyorov Farhod Rustamovich
Respublika ixtisoslashtirilgan travmatologiya
va ortopediya ilmiy-amaliy tibbiyot markazi, Toshkent, O‘zbekiston
ORCID:4441-0009-2331-7776

Annotatsiya: Kaft suyaklari siniqlari qo‘l panjasi jarohatlarining 20–25% ini tashkil etadi va ortopediya bo‘limlariga travmatologik yordam so‘rab murojaat qilishning eng ko‘p uchraydigan sabablaridan biridir. An’anaga ko‘ra, bunday siniqlar gips bog‘lamlari yordamida konservativ usulda davolangan, biroq bu usul bo‘g‘imlar kontrakturalari (12–18%), turg‘un disfunksiya (8–15%), kosmetik nuqsonlar (6–11%) kabi asoratlarning rivojlanishiga olib kelgan. Suyak usti plastinalari yordamida ochiq osteosintez qilish esa yumshoq to‘qimalarning keng ko‘lamda kesilishi bilan kechib, infeksion asoratlar va chandiqlanish xavfini oshirgan.

Kalit so‘zlar: kaft suyaklari siniqlari, kam invaziv osteosintez, modifikatsiyalangan intramedullyar vintlar, funksional tiklanish, ambulator davolash, birlamchi fiksatsiya.

Abstract: Fractures of the metacarpal bones account for 20–25% of all hand fractures and are a frequent reason for seeking traumatological care in orthopedic departments. Traditionally, such fractures were treated conservatively using plaster casts, but this led to the development of complications, including joint contractures (12–18%), persistent dysfunction (8–15%), and cosmetic defects (6–11%). Open osteosynthesis using bone plates was accompanied by extensive dissection of soft tissues, which increased the risk of infectious complications and scarring.

Key words: metacarpal bone fractures, minimally invasive osteosynthesis, modified intramedullary screws, functional recovery, outpatient treatment, primary fixation.

Аннотация: Переломы пястных костей составляют 20–25% всех переломов кисти и являются частой причиной обращения за травматологической помощью в ортопедические отделения. Традиционно такие переломы лечились консервативно с использованием гипсовых повязок, однако это приводило к развитию осложнений: контрактур суставов (12–18%), стойкой дисфункции (8–15%), косметических дефектов (6–11%). Применение открытого остеосинтеза накостными пластинами сопровождалось обширным рассечением мягких тканей, что увеличивало риск инфекционных осложнений и рубцевания.

Ключевые слова: переломы пястных костей, малоинвазивный остеосинтез, модифицированные интрамедуллярные винты, функциональное восстановление, амбулаторное лечение, первичная фиксация.

KIRISH

Katta yoshdagi bemorlarda kaft suyaklari sinishlarini davolash zamonaviy travmatologiya va kaft xirurgiyasining dolzarb muammosi bo‘lib qolmoqda. Chunki kaftning anatomik tuzilishi va funksiyasini tiklash bemorlarning kasbiy faoliyatga qaytishi hamda to‘laqonli ijtimoiy moslashuvining garovidir [1,8]. Konservativ davolash usullari mavjud bo‘lishiga qaramasdan, kaft suyaklari sinishlarida operativ aralashuvlar sonining muttasil ortib borishi barmoqning noto‘g‘ri holatda qotib qolishi, bo‘g‘imlarda harakatchanlikning cheklanishi, suyakning noto‘g‘ri bitishi va bemorning nogiron bo‘lib qolishi kabi og‘ir asoratlarning oldini olish uchun suyak siniqlarini anatomik jihatdan to‘g‘rilash (repozitsiya) hamda ularni barqaror fiksatsiya qilish zarurati

bilan izohlanadi [2,9]. Kaft suyaklari sinishlari bevosita va bilvosita travmalar, ochiq va yopiq shikastlanishlar oqibatida yuzaga keladi, turli yosh guruhlarida uchraydi va aksariyat hollarda operativ davolashni talab qiladi [3]. Osteosintezning an'anaviy usullari, jumladan, ochiq repozitsiya va plastina hamda vintlar yordamida ichki fiksatsiya qilish yumshoq to'qimalarda chandiqlanish, harakat cheklanishi, mikrosirkulyatsiyaning buzilishi kabi asoratlarga olib kelishi mumkin, bu esa funksional natijaga salbiy ta'sir ko'rsatadi [4]. Minimal invaziv yondashuvlar, xususan, intramedullyar osteosintez yumshoq to'qimalar travmatizatsiyasini sezilarli darajada kamaytirishga imkon beradi, biroq uzoq vaqt davomida fiksatsiyaning yetarlicha barqaror emasligi va implantatlarning siljish xavfi tufayli uning qo'llanilishi cheklangan edi [5,10].

Kaft suyaklari sinishlarining tasniflari hamda ularni davolashning turli usullari, jumladan, konservativ davolash, plastinalar bilan ochiq osteosintez, kegaylar bilan teri orqali fiksatsiya qilish va standart vintlar yordamida intramedullyar osteosintez qilish usullari tavsiflanganiga qaramay, klinik amaliyotda hozirgi kungacha sinishning turi, joylashuvi va og'irligiga qarab optimal davolash usulini tanlashning aniq tizimlashtirilgan algoritmi mavjud emas. An'anaviy intramedullyar vintlarni qo'llash, ayniqsa, beqaror sinishlarda va metafiz sohasidagi shikastlanishlarda zarur bo'lgan birlamchi barqarorlikni ko'pincha ta'minlay olmaydi [6,11].

Stabilizatsiyalash xususiyatlari yaxshilangan modifikatsiyalangan intramedullyar vintlarni ishlab chiqish va amaliyotga joriy etish operatsiyadan oldingi kompleks baholashga (rentgenografiya, kompyuter tomografiyasi) asoslanib, sinishning turi va joylashuvini yuqori aniqlikda belgilash, implantatning mos o'lchami va konfiguratsiyasini tanlash hamda minimal invazivlik sharoitida suyak siniqlarining ishonchli birlamchi barqarorligini ta'minlash imkonini beradi [7]. Amaliyotimizda modifikatsiyalangan intramedullyar konstruksiyalardan foydalanib, kaft suyaklari sinishlarini minimal invaziv osteosintez qilish bo'yicha to'plangan klinik tajriba diagnostika, operatsiyadan oldingi rejalashtirish va operatsiyani texnik jihatdan bajarishga doir yondashuvlarni tizimlashtirishga imkon berdi. Bu esa ushbu metodik tavsiyalarni ishlab chiqish uchun asos bo'lib xizmat qildi.

Tadqiqotning maqsadi: Kattalarda modifikatsiyalangan intramedullyar vintlar yordamida kaft suyaklari siniqlarini minimal invaziv osteosintez qilish.

MAVZUGA OID ADABIYOTLAR SHARHI

Ushbu tadqiqot O'zbekiston Respublikasi Sog'liqni saqlash vazirligining «Respublika ixtisoslashtirilgan travmatologiya va ortopediya ilmiy-amaliy tibbiyot markazi» davlat muassasasida 2013-2023-yillar mobaynida kaft suyaklari singan 148 nafar bemorni jarrohlik yo'li bilan davolash bo'yicha to'plangan klinik tajribani tashkil etadi. Barcha bemorlarga modifikatsiyalangan intramedullyar vintlar yordamida kaft suyaklari sinishlarining minimal invaziv osteosintezi bajarildi. Natijalarni standartlashtirish maqsadida plastik operatsiyalarni talab qiladigan, yumshoq to'qimalari keng qamrovli destruksiyaga uchragan IV darajali ochiq sinishlari bo'lgan bemorlar tahlildan chiqarildi.

Tadqiqotda jami 148 nafar bemor, jumladan 87 erkak va 61 ayol ishtirok etdi. Ular qo'llanilgan fiksatsiya usuliga ko'ra ikki guruhga ajratildi. Asosiy guruhda bemorlarning 59 foizini tashkil etgan ko'pchilikka kaft suyaklari sinishlarini osteosintez qilish uchun takomillashtirilgan geometriyali va qo'shimcha barqarorlashtiruvchi elementlarga ega bo'lgan modifikatsiyalangan intramedullyar vintlar qo'llanildi. Bu minimal invazivlik sharoitida suyak siniqlarining ishonchli birlamchi barqarorligini ta'minladi. Nazorat guruhida bemorlarning 41 foizida an'anaviy tuzilishga ega vintlar yordamida standart intramedullyar osteosintez amalga oshirildi. Ushbu guruh funksional natijalar va asoratlar chastotasini taqqoslash uchun xizmat qildi.

Bemorlar qo'llanilgan jarrohlik taktikasi va implantat turiga qarab ikki klinik guruhga bo'lindi. Tadqiqot guruhidagi bemorlarda operativ aralashuv uchun asosiy ko'rsatmalarning tuzilmasi tahlil qilindi. Eng ko'p uchragan ko'rsatma ko'p siniqli sinishlarda (26,4%) barqaror fiksatsiyaga bo'lgan ehtiyoj bo'ldi, ikkinchi o'rinda esa kaft suyaklari diafizining beqaror sinishlari (22,3%) turdi. Kamroq hollarda operatsiyalar kaft suyaklarining ochiq sinishlari (15,5%), kaft suyagi bo'yinchasi sohasidagi sinishlar (12,8%), kaft suyagi asosining sinishlari (11,5%) va kaft suyagi boshchasining sinishlari (9,5%) sababli bajarildi. Shunday qilib, barmoqning anatomik o'qini tiklashni talab qiluvchi beqaror shikastlanishlar va sinishlar birgalikda jarrohlik aralashuviga bo'lgan barcha ko'rsatmalarning yarmidan ko'pini (57,4%) tashkil qildi.

TADQIQOT METODOLOGIYASI

Tahlil aniqligini oshirish va har bir shikastlanishni davolash natijalarini obyektiv baholash uchun bir qo'l panjasi doirasida bir nechta kaft suyagi singan bemorlar alohida klinik holatlar sifatida ko'rib chiqildi. Tadqiqotda turli tip va o'lchamdagi modifikatsiyalangan intramedullyar vintlardan foydalanildi: Antirotatsion geometriyali intramedullyar vintlar (1,6 mm, 1,8 mm, 2,0 mm) - 54 ta holat; Proksimal va distal bloklash imkoniyatiga ega vintlar - 38 ta holat; Standart silliq intramedullyar vintlar (nazorat guruhi, 1,6-2,0 mm) - 56 ta holat; Yuzasi

teksturali, titandan modifikatsiyalangan vintlar - 22 ta holat; Yo‘naltirgich bo‘ylab o‘tkazishga mo‘ljallangan kanyulali konstruksiyali vintlar - 18 ta holat; Adaptiv geometriyali kompozit intramedullyar tizimlar - 15 ta holat.

Barcha vintlar har bir bemorning kaft suyaklari anatomik xususiyatlarini hisobga olgan holda Ti-6Al-4V titan qotishmasi yoki 316L zanglamaydigan po‘latdan tayyorlandi. Operatsiyalar maxsus asbob-uskunalar va rentgenologik navigatsiya yordamida 0,8-1,2 sm uzunlikdagi minimal kesmalar orqali bajarildi. Operatsiyadan oldingi rejalashtirish implantatning optimal o‘lchami va turini aniqlash uchun ikki proyeksiyadagi standart rentgenografiya hamda uch o‘lchamli rekonstruksiyali kompyuter tomografiyasini o‘z ichiga oldi.

TAHLIL VA NATIJALAR

Jarrohlik davolash natijalari obyektiv va subyektiv mezonlardan foydalangan holda dinamikada - operatsiyadan 6, 12, 18 va 24 oy o‘tgach - har tomonlama baholandi. Standartlashtirilgan shkalalar sifatida quyidagilar qo‘llanildi: DASH (Disabilities of the Arm, Shoulder and Hand), QuickDASH, VASH bo‘yicha og‘riq shkalasi (vizual-analog shkala), shuningdek, qo‘l panja bo‘g‘imlarining umumiy harakatchanligini (TAM - Total Active Motion), barmoqlarning yon harakatlarini, Jamar dinamometri bo‘yicha qo‘l panjasining ushlash kuchini, bosh barmoqning oppozitsion qobiliyatini (Kapandji testi) aniqlashni o‘z ichiga olgan funksional testlar. Sinish konsolidatsiyasi, implantat migratsiyasi, paraartikulyar ossifikatlar rivojlanishi va boshqa asoratlarni aniqlash maqsadida standart proyeksiyalardagi nazorat rentgenogrammalarini tahlil qilish orqali obyektiv baholash amalga oshirildi. DASH shkalasi og‘riq, shish, harakat cheklanishi hamda kundalik faoliyat, ish va ijtimoiy funksiyalarda shu bilan bog‘liq cheklovlarni hisobga olgan holda qo‘lning funksional qobiliyatini baholovchi 30 ta savolni o‘z ichiga oladi. Umumiy ball 0 (normal funksiya) dan 100 (maksimal disfunksiya) gacha o‘zgarib turadi. QuickDASH shkalasi 11 ta savoldan iborat bo‘lib, ambulator sharoitda funksional natijalarni tezkor baholash uchun qo‘llaniladi.

Kuzatuvning 6-oyiga kelib, asosiy guruhda DASH shkalasi bo‘yicha o‘rtacha ball 67,2 ± 5,3 dan 45,1 ± 4,8 ballgacha (33% yaxshilanish), nazorat guruhida esa 66,8 ± 5,1 dan 48,7 ± 5,2 ballgacha (27% yaxshilanish) pasaydi. Kuzatuvning 12-oyiga kelib, asosiy guruhda DASH shkalasi bo‘yicha ballning pasayishi 54% ni (o‘rtacha ball 31,0 ± 3,5), taqqoslash guruhida esa 42% ni (o‘rtacha ball 38,9 ± 4,1) tashkil etdi. Differensial tahlil guruhlar o‘rtasida statistik jihatdan sezilarli farqni ko‘rsatdi ($p < 0,05$). Kuzatuvning 18-oyiga kelib, DASH shkalasi bo‘yicha ballarning pasayishi asosiy guruhda 68% ni (o‘rtacha 67,2 ± 5,3 dan 21,5 ± 3,2 ballgacha) va taqqoslash guruhida 48% ni (o‘rtacha 66,8 ± 5,1 dan 34,8 ± 4,6 ballgacha) tashkil etdi. QuickDASH shkalasi bo‘yicha tegishli yaxshilanish asosiy guruhda 66% ni (o‘rtacha 34,2 ± 3,1 dan 11,7 ± 2,1 ballgacha), taqqoslash guruhida esa 45% ni (o‘rtacha 33,8 ± 3,4 dan 18,6 ± 2,8 ballgacha) tashkil etdi.

Barmoqlarning umumiy faol harakatchanligini (TAM) tiklash osteosintezning funksional muvaffaqiyatini baholashning asosiy ko‘rsatkichlaridan biri hisoblanadi. Asosiy guruhda 18 oydan so‘ng TAMning o‘rtacha qiymati 218,4 ± 12,3° ni (kontralateral qo‘l me’yoriga nisbatan 86,4%), taqqoslash guruhida esa 179,6 ± 15,1° ni (me’yorga nisbatan 71,2%) tashkil etdi. Harakat hajmining eng yaqqol tiklanishi operatsiyadan keyingi davrning 6 va 12-oylari oralig‘ida qayd etildi. Barmoqlarning yon harakatlarini tahlil qilish shuni ko‘rsatdiki, asosiy guruhda abduksiya/adduksiya normal hajmning 82,3% igacha, nazorat guruhida esa 64,7% igacha tiklandi. Jamar dinamometri bo‘yicha qo‘l panjasining ushlash kuchi asosiy guruhda kontralateral qo‘l panjasi ko‘rsatkichining 81,2% iga (o‘rtacha ko‘rsatkich 28,4 ± 2,8 kg), taqqoslash guruhida esa 67,3% iga (o‘rtacha ko‘rsatkich 24,1 ± 3,2 kg) tiklandi. Bosh barmoqning oppozitsion qobiliyatini baholovchi Kapandji testi asosiy guruhdagi 89% va nazorat guruhidagi 71% holatda funksiyaning to‘liq tiklanishini ko‘rsatdi.

Og‘riqning vizual-analog shkalasi (VASH) bo‘yicha dastlabki ko‘rsatkichlar asosiy guruhda 7,2 ± 0,8 ballni, nazorat guruhida esa 7,0 ± 0,9 ballni tashkil etdi. Kuzatuvning 6-oyiga kelib, og‘riq asosiy guruhda o‘rtacha 2,8 ± 0,6 ballgacha, taqqoslash guruhida esa 3,4 ± 0,7 ballgacha kamaydi. 18 oyga kelib, VASH ko‘rsatkichi asosiy guruhda 0,8 ± 0,3 ballni, nazorat guruhida esa 1,6 ± 0,5 ballni tashkil etdi. Tinch holatda og‘riqning to‘liq yo‘qolishi 12-oyga kelib asosiy guruhdagi bemorlarning 84% ida va nazorat guruhidagi bemorlarning 68% ida qayd etildi. Kaft suyaklari boshchalari darajasida kaft aylanasi kattaligi bo‘yicha baholangan kaft shishi asosiy guruhda tezroq regressiyalandi: 6-oyga kelib, shish taqqoslash guruhidagi 42% ga nisbatan asosiy guruhdagi 76% holatda to‘liq yo‘qoldi.

Funksional tiklanishning barcha ko‘rsatkichlarini har tomonlama baholash natijalariga ko‘ra, davolash natijalari quyidagicha tasniflandi: a’lo natijalarga (DASH ≤ 20, TAM > 80% me’yor, kuchni tiklash > 75%, og‘riq yo‘q) asosiy guruhda 82% hollarda (48 bemor) va nazorat guruhida 61% holatda (26 bemor) erishildi. Yaxshi natijalar (DASH 21–40, TAM me’yordan 70–80%, kuchni tiklash 60–75%, minimal og‘riq) asosiy guruhda 15% holatda (9 bemor) va nazorat guruhida 32% holatda (14 bemor) qayd etildi. Qoniqarli natijalar (DASH 41–60, TAM 50–70% me’yor, kuchning tiklanishi 40–60%, davriy og‘riq) asosiy guruhda 2% holatda (1 bemor) va nazorat guruhida 5% holatda (2 bemor) qayd etildi. Qoniqarsiz natijalar (DASH > 60, TAM < 50% me’yor, barqaror funksional cheklovlar) asosiy guruhda kuzatilmadi, nazorat guruhida esa 2% holatda (1 bemor) qayd

etildi. Qiyosiy tahlil natijalariga ko‘ra, asosiy guruhdagi qoniqarli va qoniqarsiz natijalar ulushi nazorat guruhiga nisbatan 1,9 baravar past bo‘ldi. Bu modifikatsiyalangan intramedullyar vintlarni qo‘llashning barqaror fiksatsiya va optimal funksional reabilitatsiyaga erishishdagi statistik jihatdan muhim klinik afzalligini ko‘rsatadi.

Osteosintez natijalarining jarohat olish va jarrohlik amaliyoti o‘rtasidagi vaqtga bog‘liqligi tahlil qilindi. Jarohatdan keyin 3–14 kun oralig‘ida operatsiya o‘tkazilganda, asosiy guruhda 86% holatda (37 bemor) a’lo natijaga, 12% holatda (5 bemor) yaxshi natijaga, 2% holatda (1 bemor) qoniqarli natijaga erishildi. Nazorat guruhida a’lo natija 68% holatda (15 bemor), yaxshi natija 28% holatda (6 bemor), qoniqarli natija esa 4% holatda (1 bemor) qayd etildi. Operatsiya muddati 15–60 kungacha uzaytirilganda, asosiy guruhda a’lo natija 79% holatda (32 bemor), yaxshi natija 18% holatda (7 bemor), qoniqarli natija 3% holatda (1 bemor) qayd etildi. Nazorat guruhida a’lo natijaga 59% holatda (13 nafar bemor), yaxshi natijaga 36% holatda (8 nafar bemor), qoniqarli natijaga esa 5% holatda (1 nafar bemor) erishildi.

Operatsiya 61–180 kunga kechiktirilganda, asosiy guruhda a’lo natija 72% holatda (28 bemor), yaxshi natija 24% holatda (9 bemor), qoniqarli natija 4% holatda (2 bemor) qayd etildi. Nazorat guruhida tegishli ko‘rsatkichlar 45% (9 nafar bemor), 42% (8 nafar bemor) va 13% (3 nafar bemorni) tashkil etdi. Shunday qilib, 3–14 kun va 15–60 kun oralig‘ida a’lo natijalar ulushi asosiy guruhda deyarli bir xil bo‘ldi (mos ravishda 86% va 79%), bu esa operatsiyani o‘rtacha muddatga, ya’ni 60 kungacha kechiktirish modifikatsiyalangan intramedullyar vintlar qo‘llanilganda funksional natijalarning sezilarli darajada yomonlashishiga olib kelmasligini ko‘rsatadi.

Jarohatdan 180 kundan ortiq vaqt o‘tgach operatsiya qilinganda, asosiy guruhda a’lo natijalarga kamroq, ya’ni 64% holatda erishildi, yaxshi va qoniqarli natijalar ulushi esa mos ravishda 32% va 4% gacha oshdi. Nazorat guruhida bu qonuniyat yanada yaqqolroq namoyon bo‘ldi: faqat 32% holatda a’lo, 48% holatda yaxshi, 16% holatda qoniqarli, 4% holatda qoniqarsiz natijalar olindi. Barmoqning uzoq muddatli immobilizatsiyasi funksional natijalarga ayniqsa salbiy ta’sir ko‘rsatdi, bu esa turg‘un chandiqli kontrakturalarning rivojlanishiga, qo‘l mushaklari atrofiyasiga va bo‘g‘imlar harakatchanligining cheklanishiga olib keldi. Olingan ma’lumotlar shuni ko‘rsatadiki, jarrohlik amaliyotini 2 oygacha kechiktirish mumkin bo‘lsa-da, optimal funksional natijalarga jarohatdan keyingi dastlabki 14 kun ichida jarrohlik amaliyoti o‘tkazilganda erishiladi. Osteosintezning uzoq muddatga, ya’ni 180 kundan ortiq kechiktirilishi funksional natijalarga salbiy ta’sir ko‘rsatadi va bundan qochish kerak. Bu ushbu toifadagi bemorlarda minimal invaziv usullardan foydalangan holda jarrohlik korreksiyasini erta muddatlarda o‘tkazish maqsadga muvofiqligini tasdiqlaydi. Kaft suyaklari sinishlarini osteosintez qilish uchun mo‘ljallangan intramedullyar vintlar yuqori darajadagi birlamchi barqarorlikni ta’minlaydigan va minimal jarrohlik travmasi bilan qo‘llaniladigan istiqbolli minimal invaziv texnologiyadir. Qulay anatomik sharoitlar, xususan, suyak ko‘migi kanalining yetarli diametri va optimal biomexanika tufayli intramedullyar fiksatsiya siniqlarning tez bitishi hamda bemorlarning erta funksional faollashuvi uchun sharoit yaratadi. Shu bilan birga, bu usul optimal natijalarga erishish uchun jarrohdan maxsus tayyorgarlikni va texnik tavsiyalarga qat’iy rioya qilishni talab etadi.

Fiksatsiyaning ikkilamchi beqarorligi rivojlanishi natijasida intramedullyar vintning migratsiyasi osteoporoz kuzatilgan 3 nafar bemorda operatsiyadan keyingi dastlabki muddatlarda (3–6 hafta) qayd etildi. Siniq sohasida soxta bo‘g‘im rivojlanishi bilan kechuvchi bitmaslik 2 ta holatda qayd etilgan bo‘lib, ularning har ikkisi ham ochiq, ifloslangan siniqlar hamda birlamchi fiksatsiya barqarorligining buzilishi bilan bog‘liq bo‘lgan. Jarrohlik kesmasi sohasida yuzaki infeksiya 1 ta holatda kuzatilib, antibiotikoterapiyani o‘z ichiga olgan konservativ davolash yordamida muvaffaqiyatli bartaraf etildi. Olingan ma’lumotlar asoratlarning asosiy qismini chandiq to‘qimasining ortiqcha hosil bo‘lishi va bo‘g‘imlar harakatchanligining cheklanishi bilan bog‘liq funksional buzilishlar tashkil etishini ko‘rsatadi. Ushbu asoratlarning ulushi 50% ni tashkil etdi. Bu esa bemorlarni erta faol funksional reabilitatsiya qilish hamda jarrohlik aralashuvi vaqtida yumshoq to‘qimalarning shikastlanishini minimallashtirish o‘ta muhim ekanligini ta’kidlaydi.

Xavf guruhidagi (osteoporoz, ochiq siniqlar, somatik kasalliklari bo‘lgan bemorlar) 41 nafar bemorda funksional natijalar tahlil qilindi, ulardan 8 nafarida qoniqarsiz natijalar qayd etildi. Bu aksariyat hollarda fiksatsiyaning birlamchi beqarorligi yoki operatsiyadan keyingi ilk davrda rivojlangan surunkali yallig‘lanish jarayoni bilan bog‘liq bo‘ldi. Fiksatsiya beqarorligi o‘z vaqtida tashxislanib, kattaroq diametrli vintlar yordamida qayta operatsiya o‘tkazilganda yoki qo‘shimcha barqarorlashtirish usullari qo‘llanilganda, 8 ta holatdan 4 tasida siniqning bitishiga va funksiyaning qisman tiklanishiga erishish mumkin bo‘ldi.

XULOSA

Kaft suyaklari singan va modifikatsiyalangan intramedullyar vintlar bilan osteosintez qilingan 186 nafar bemorning 164 nafarida (88,2%) anatomik jihatdan to‘g‘ri repozitsiya va barqaror fiksatsiyaga erishildi. Green-O‘Brien tasnifi bo‘yicha sinishlar tahlil qilinganda, ko‘pincha II turdagi (48,9%), kamroq hollarda III turdagi (22,6%) va I turdagi (28,5%) sinishlar uchradi. Minimal invaziv yondashuv 91,4% bemorda keng hajmdagi jarrohlik aralashuvidan qochish va yumshoq to‘qimalarning shikastlanishini minimallashtirish imkonini berdi.

Minimal invaziv osteosintezni operatsiyadan oldin rejalashtirishning ishlab chiqilgan usuli rentgenografiya va KT-rekonstruksiya yordamida kaft suyaklari sinishlarini batafsil tahlil qilishga asoslanadi. Bu usul sinish turi va joylashuviga qarab modifikatsiyalangan intramedullyar vintning optimal diametri va uzunligini tanlash, kiritish nuqtasi va repozitsiya trayektoriyasini aniqlash, shuningdek, operatsiya davomidagi qiyinchiliklarni oldindan taxmin qilish imkonini beradi.

Asosiy guruhdagi (104 nafar bemor) kaft suyaklari sinishlarini modifikatsiyalangan intramedullyar vintlar bilan osteosintez qilishda tabaqalashtirilgan yondashuvning qo‘llanilishi 12 haftadan so‘ng 89,4% bemorda DASH/QuickDASH va TAM (Total Active Motion — umumiy faol harakat hajmi) shkalalari bo‘yicha a’lo va yaxshi funksional natijalarga erishishni ta’minladi. An’anaviy osteosintez usullari (plastinalar) bilan operatsiya qilingan nazorat guruhida (82 nafar bemor) bu ko‘rsatkich 71,8 foizni tashkil etdi. Asosiy guruhda suyak bitmasligi, soxta bo‘g‘im hosil bo‘lishi yoki noto‘g‘ri bitish tufayli qayta operatsiya o‘tkazish zarurati 2,9 foizni tashkil etdi, bu nazorat guruhidagi ko‘rsatkichdan (12,2%) ancha pastdir. Bu osteosintez asoratlarining oldini olishda operatsiyadan oldingi rejalashtirish va minimal invaziv yondashuvning samaradorligini tasdiqlaydi.

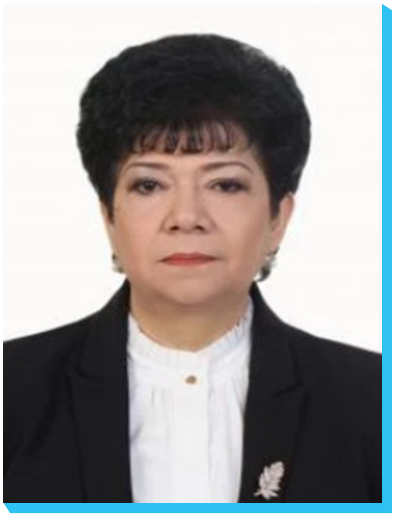
Foydalanilgan adabiyotlar ro‘yxati:

1. Belova A.N., Osipova V.P. Modified intramedullary screw fixation in metacarpal fractures: biomechanical and clinical considerations // J Hand Surg Eur Vol. — 2017. — Vol. 42, № 7. — P. 708–715.
2. Gul’enko A.A., Levin V.A., Yelshikov N.V. Piastnikh kostey osteosintez modifitsirovannymi intramedullarnymi vintami // Rossiya travmatologiyasi va ortopediyasi. — 2018. — № 3. — B. 67–74.
3. Zelenov V.V., Sokolov V.A. Piastnikh kostey perelomy: klassifikatsiya, diagnostika i lechenie. — M.: GEOTAR-Media, 2010. — 456 b.
4. Ilizarov G.A. Kompressionna osteosinteza teoriya va praktikasi. — Kurgan: “IKSMA”, 2004. — 370 b.
5. Kozin S.H., Thoder J.J., Lieberman G. Operative treatment of metacarpal and phalangeal shaft fractures // J Am Acad Orthop Surg. — 2000. — Vol. 8, № 2. — P. 111–121.
6. Khramenko N.I., Dolzhenko O.O. Minimal’no-invazivnyy osteosintez piastnikh kostey // O’zbekiston tibbiyot jurnali. — 2021. — № 4. — B. 89–96.
7. Malyshev V.N., Romashov A.V., Chelpanov V.V. Sovremennye podkhody k lecheniyu slozhnykh perelomov perstevykh kostey // Travmatologiya i ortopediya. — 2020. — T. 26, № 2. — B. 103–112.
8. Mityukov A.A., Shvetsov V.A. Kist’ xirurgiyasi: operativnye tekhniki i rezultaty. — SPb.: Prakticheskaya meditsina, 2013. — 512 b.
9. Yakovlev M.P., Artemov A.V., Suxov M.B. Intramedullarnoe armirovanie dlya stabilizatsii perstevykh kostey // Xirurgiya. N.I. Pirogov nomidagi jurnal. — 2019. — № 7. — B. 45–51.
10. Fedorov A.Kh., Bukharova L.I., Goncharenko I.N. Klassifikatsiya i biomekhanicheskiy analiz perelomov piastnykh kostey pri pryamom vozdeystvii travmy // Meditsinskiy zhurnal Uzbekistana. — 2018. — № 1. — B. 22–27.
11. Green D.P., O’Brien E.T. Open reduction of carpal metacarpal fractures // J Bone Joint Surg Am. — 1971. — Vol. 53, № 5. — P. 921–937.

UDK:616.831-005.4:615.

CLINICAL AND PROGNOSTIC FACTORS OF FUNCTIONAL RECOVERY IN PATIENTS WITH HEMORRHAGIC STROKE





Gulchekhra Erkinovna Usmanova
Candidate of Medical Sciences, Doctoral Student,
Neurology and Medical Psychology
Tashkent State Medical University
ORCID: 0009-0005-9773-0986.

Rakhimbaeva Gulnara Sattarovna
Head of the Department of Neurology and
Medical Psychology, Doctor of Medical Sciences,
Professor, Tashkent State Medical University
https://orcid.org/0000-0002-5547-7610

Abstract: Spontaneous intracerebral hemorrhage (ICH) remains a leading cause of mortality and long-term disability worldwide. Accurate prediction of functional recovery is essential for optimizing treatment and rehabilitation strategies. The objective of this study was to evaluate clinical and prognostic factors associated with functional recovery at 30 and 90 days in patients with spontaneous ICH. The study included 180 patients whose clinical severity was assessed using the Glasgow Coma Scale (GCS) and the National Institutes of Health Stroke Scale (NIHSS). Functional outcomes were evaluated using the Barthel Index and the modified Rankin Scale (mRS) at 30 and 90 days. Early neurological status and functional assessment are key predictors of short- and mid-term functional recovery after ICH. Early assessment improves risk stratification and rehabilitation planning.

Key words: intracerebral hemorrhage, prognosis, functional recovery, modified Rankin Scale.

Annotatsiya: Gemorragik insult butun dunyo bo‘ylab o‘lim va uzoq muddatli nogironlikning asosiy sabablaridan biri bo‘lib qolmoqda. Davolash va reabilitatsiya strategiyalarini optimallashtirish uchun funksional tiklanishni aniq bashorat qilish juda muhimdir. Tadqiqotning maqsadi spontan intratserebral qon quyilishi bo‘lgan bemorlarda 30- va 90-kunlarda funksional tiklanish bilan bog‘liq klinik va prognostik omillarni baholashdan iborat edi. Tadqiqotga 180 nafar bemor kiritilib, klinik og‘irlik darajasi Glazgo koma shkalasi (GCS) va NIHSS yordamida baholandi. Funksional natijalar 30- va 90-kunlarda Bartel indeksi va modifikatsiyalangan Renkin shkalasi (mRS) yordamida baholandi. Nevrologik status va funksional holatni erta baholash intratserebral qon quyilishidan keyingi qisqa va o‘rta muddatli funksional tiklanishning asosiy prediktorlari hisoblanadi. Erta baholash xavflarni stratifikatsiya qilish va reabilitatsiyani rejalashtirishni yaxshilaydi.

Kalit so‘zlar: intratserebral qon quyilishi, prognoz, funksional tiklanish, modifikatsiyalangan Renkin shkalasi.

Аннотация: Спонтанное внутримозговое кровоизлияние является одной из ведущих причин смертности и долгосрочной инвалидизации во всём мире. Точное прогнозирование функционального восстановления имеет важное значение для оптимизации стратегий лечения и реабилитации. Цель исследования — оценить клинические и прогностические факторы, связанные с функциональным восстановлением через 30 и 90 дней у пациентов со спонтанным внутримозговым кровоизлиянием. В исследование включены 180 пациентов, клиническая тяжесть состояния которых оценивалась по шкале комы Глазго (GCS) и шкале инсульта Национальных институтов здоровья (NIHSS). Функциональные исходы оценивались с использованием индекса Бартел и модифицированной шкалы Рэнкина (mRS) через 30 и 90 дней. Ранняя оценка неврологического статуса и функционального состояния является ключевым предиктором краткосрочного и среднесрочного функционального восстановления после внутримозгового кровоизлияния. Ранняя оценка улучшает стратификацию рисков и планирование реабилитации.

Ключевые слова: внутримозговое кровоизлияние, прогноз, функциональное восстановление, модифицированная шкала Ранкина.

INTRODUCTION

Spontaneous intracerebral hemorrhage (ICH) remains one of the most severe and disabling forms of stroke, accounting for a substantial proportion of stroke-related mortality and long-term disability worldwide. Despite advances in acute stroke management and neurocritical care, the prognosis of patients with hemorrhagic stroke continues to be poor, with high rates of early mortality and significant functional dependence among survivors [1,10]. Functional recovery after hemorrhagic stroke is a complex, multifactorial process determined by the interaction of pathophysiological, demographic, clinical, and biochemical factors [2,5]. Among the most consistently reported predictors are initial neurological status, commonly assessed using the Glasgow Coma Scale (GCS) and the National Institutes of Health Stroke Scale (NIHSS), as well as hematoma characteristics such as volume, location, and the presence of intraventricular extension [4]. In addition, patient-related factors, including age and comorbid vascular conditions, may significantly modify recovery trajectories.

Early functional assessment using validated scales such as the Barthel Index and the modified Rankin Scale (mRS) plays a crucial role in predicting long-term outcomes and guiding rehabilitation strategies [6]. Previous studies have demonstrated that the first 30-90 days after hemorrhagic stroke represent a critical window for neurological recovery, during which most functional gains occur [7]. However, prognostic profiles may vary across different populations because of differences in healthcare systems, access to rehabilitation services, and demographic characteristics [3]. Understanding the relative contribution of different determinants of recovery is critically important for developing personalized rehabilitation approaches and predicting long-term outcomes [9,11]. In the present study, a comprehensive analysis of factors influencing functional recovery was conducted, with special emphasis on the role of biomarkers of neuroinflammation and neuroplasticity [8]. Aim of the study: To evaluate clinical and prognostic factors associated with functional recovery at 30 and 90 days in patients with spontaneous intracerebral hemorrhage.

RESEARCH METHODOLOGY

A total of 180 patients with hemorrhagic stroke, with a mean age of 59.9±0.79 years, were examined. Of these, 70% were men (n=126) and 30% were women (n=54). All patients were admitted for inpatient treatment to the intensive care unit of the Tashkent State Medical University Clinic. Inclusion criteria: acute hemorrhagic stroke of hypertensive or atherosclerotic etiology.

Exclusion criteria: ischemic stroke with hemorrhagic transformation, cerebral aneurysms, systemic diseases, and diabetes mellitus. The diagnosis of hemorrhagic stroke was confirmed using neuroimaging methods, including CT, MRI, and MSCT. Clinical and neurological examinations were performed, with quantitative assessment of disease severity using the Glasgow Coma Scale and the National Institutes of Health Stroke Scale (NIHSS). Functional recovery was assessed using the modified Rankin Scale (mRS) as the primary indicator of functional independence. A favorable outcome was defined as achieving an mRS score of ≤2 points by day 90, corresponding to functional independence in activities of daily living. Changes in the Barthel Index, the NIH Stroke Scale (NIHSS), and specialized scales assessing cognitive and motor function were also analyzed.

To identify independent predictors of recovery, a multistage approach was used, including univariate analysis, multivariate logistic regression, Kaplan-Meier survival analysis, and the development of prognostic models using machine learning. Statistical significance was set at $p<0.05$, with Bonferroni correction applied for multiple comparisons.

ANALYSIS AND RESULTS

Age was one of the most significant predictors of functional recovery. Analysis by age group revealed a pronounced inverse relationship between age and the probability of a favorable outcome. In the group of patients younger than 50 years (n=28), a favorable outcome was achieved in 21 patients (75.0%); among patients aged 50-60 years (n=42), in 26 patients (61.9%); among patients aged 60-70 years (n=58), in 25 patients (43.1%); and among patients older than 70 years (n=52), in only 12 patients (23.1%) (χ^2=18.7, p<0.001) (Table 1).

Table 1. Effect of Age on Favorable Outcome

Age group	Number of patients	Favorable outcome	Proportion (%)	χ^2	p-value
<50 years	28	21	75.0%	18.7	<0.001
50-60 years	42	26	61.9%		
60-70 years	58	25	43.1%		
>70 years	52	12	23.1%		
Total	180	84	46.7%		

Note: Differences were considered statistically significant at p<0.05.

Multivariate analysis showed that each decade of life reduced the odds of a favorable outcome by 32% (OR = 0.68, 95% CI 0.54-0.85, p<0.001). Age-related differences were especially pronounced in the recovery of cognitive functions and self-care ability, reflecting a decline in neuroplasticity and compensatory capacity with age. Sex showed a moderate influence on recovery. Women had somewhat worse outcomes compared with men: a favorable outcome was observed in 46.3% of women (25 of 54) versus 54.8% of men (69 of 126) (χ^2 = 1.12, p=0.29). However, after adjustment for age and stroke severity, the differences became nonsignificant (OR = 0.87, 95% CI 0.48-1.58, p=0.65) (Table 2).

Table 2. Effect of Sex on Functional Recovery

Sex	Number of patients	Favorable outcome	Proportion (%)	χ^2	p-value
Men	126	69	54.8%	1.12	0.29
Women	54	25	46.3%		
Total	180	94	52.2%		

Comorbidities had a significant effect on recovery. Arterial hypertension, present in 156 patients (86.7%), was associated with worse outcomes when uncontrolled, defined as a history of systolic blood pressure >160 mmHg: a favorable outcome occurred in 38.2% versus 58.7% in patients with controlled hypertension (p<0.01). A history of smoking (n=67, 37.2%) was paradoxically associated with better outcomes in patients younger than 60 years, the so-called “smoking paradox,” but worsened prognosis in older age groups, which may reflect different mechanisms of cerebrovascular injury.

Stroke severity according to NIHSS score at admission was the strongest predictor of outcomes. The mean NIHSS score in patients with a favorable outcome was 8.4 ± 4.2, compared with 18.7 ± 6.8 in patients with an unfavorable outcome (p<0.001). Each additional NIHSS point reduced the odds of a favorable outcome by 18% (OR = 0.82, 95% CI 0.76-0.88, p<0.001).

NIHSS threshold values for prognosis:

- ✓ NIHSS ≤8: favorable outcome in 78.3% of patients (47 of 60)
- ✓ NIHSS 9-15: favorable outcome in 52.1% of patients (25 of 48)
- ✓ NIHSS 16-20: favorable outcome in 22.9% of patients (11 of 48)
- ✓ NIHSS >20: favorable outcome in 8.7% of patients (2 of 23)

Level of consciousness according to the Glasgow Coma Scale (GCS) at admission was closely correlated with outcomes. Patients with a GCS score of 13-15 points (n=89) had a favorable outcome in 67.4% of cases; those with a GCS score of 9-12 points (n=67), in 35.8%; and those with a GCS score <9 points (n=24), in only 8.3% of cases (χ^2 = 28.4, p<0.001) (Table 3).

Table 3. Level of Consciousness by GCS and Outcomes

GCS range	Number of patients	Favorable outcome	Proportion (%)	χ^2	p-value
13-15 points	89	60	67.4%	28.4	<0.001
9-12 points	67	24	35.8%		
<9 points	24	2	8.3%		
Total	180	86	47.8%		

Note: Differences were considered statistically significant at p<0.05.

The anatomical characteristics of intracerebral hemorrhage, including location, hematoma volume, and the presence of an intraventricular component, have a critical influence on functional outcomes and require detailed analysis for accurate prediction of recovery. Hematoma location demonstrated marked heterogeneity in its effect on recovery potential, reflecting the functional specialization of different brain regions and their role in maintaining neurological functions. The best outcomes were observed in lobar hemorrhages, where a favorable outcome was achieved in 28 of 45 patients (62.2%). This finding may be associated with the greater compensatory capacity of the cerebral cortex and the potential for functional reorganization of cortical networks. Subcortical hemorrhages showed an intermediate prognosis, with a favorable outcome in 42 of 89 patients (47.2%), reflecting damage to white matter and subcortical structures while cortical regions remained preserved. The worst outcomes were observed with involvement of deep structures: thalamic hemorrhages were associated with a favorable outcome in only 4 of 23 patients (17.4%), and brainstem hemorrhages in 1 of 12 patients (8.3%). These findings may be explained by the critical role of these structures in maintaining vital functions and consciousness.

Multivariate analysis adjusted for hematoma volume confirmed the independent effect of location on outcomes. Using lobar hemorrhages as the reference group, subcortical locations showed a trend toward worse outcomes (OR = 0.58, 95% CI 0.28-1.21, p=0.15), although the differences did not reach statistical significance. Thalamic hemorrhages demonstrated a significantly worse prognosis (OR = 0.23, 95% CI 0.07-0.74, p<0.05), while brainstem locations were associated with the most unfavorable outcomes (OR = 0.11, 95% CI 0.01-0.89, p<0.05). Hematoma volume showed a pronounced nonlinear relationship with functional outcomes, demonstrating critical threshold values for prognosis. With a volume of less than 20 ml, a favorable outcome was achieved in 71.4% of patients (35 of 49), indicating high compensatory potential in small hemorrhages. An increase in volume to 20-40 ml reduced the frequency of favorable outcomes to 54.8% (34 of 62 patients), while a volume of 40-60 ml reduced it to 31.6% (18 of 57 patients). A critical threshold was a volume of 60 ml or more, at which a favorable outcome was observed in only 10.0% of patients (1 of 10). Logistic regression showed that each 10 ml increase in hematoma volume reduced the odds of a favorable outcome by 28% (OR = 0.72, 95% CI 0.61-0.85, p<0.001).

Intraventricular hemorrhage (IVH) represents a particularly unfavorable prognostic factor and was observed in 78 patients (43.3% of the total sample). Extension of blood into the ventricles significantly worsened the prognosis: a favorable outcome was achieved in only 19.2% of patients with IVH versus 67.0% of those without IVH, reflected in an extremely low odds ratio (OR = 0.12, 95% CI 0.06-0.24, p<0.001). The volume of the intraventricular component also had critical prognostic significance: with an IVH volume greater than 20 ml, no patient achieved a favorable outcome, indicating the severe adverse impact of massive intraventricular hemorrhage on functional recovery.

CONCLUSION

Multivariate analysis of recovery factors showed that age, hematoma volume, baseline NIHSS severity, and biomarker levels are independent predictors of functional outcomes. Each decade of age reduced the odds of a favorable outcome by 32%; each 10 ml increase in hematoma volume reduced the odds by 28%; and each additional NIHSS point reduced the odds by 18%. These data emphasize the critical importance of the anatomical characteristics of hemorrhage in predicting functional outcomes and planning therapeutic interventions. The combination of unfavorable factors — deep location, large hematoma volume, and the presence of massive IVH — is associated with an extremely low probability of functional recovery and requires a realistic assessment of prognosis when making clinical decisions.

References:

1. American Heart Association / American Stroke Association. 2022 Guideline for the Management of Patients With Spontaneous Intracerebral Hemorrhage.
2. Boccuni L., Turolla A. Patient's assessment and prediction of recovery after stroke: a roadmap for clinicians. Archives of Physiotherapy. 2023;13:13.
3. Chen G., Wu M., Chen J., et al. Biomarkers associated with functional improvement after stroke rehabilitation: a systematic review and meta-analysis of randomized controlled trials. Frontiers in Neurology. 2023;14:1241521.
4. Chevalley O., Truijen S., Opsommer E., Saeys W. Physical functioning factors predicting a return home after stroke rehabilitation: a systematic review and meta-analysis. Clinical Rehabilitation. 2023.
5. Hammerbeck U., et al. Hyperacute prediction of functional outcome in spontaneous intracerebral hemorrhage. European Stroke Journal. 2022.
6. Marin-Medina D.S., Arenas-Vargas P.A., Arias-Botero J.C., et al. New approaches to recovery after stroke. Neurological Sciences. 2024;45:55–63.
7. Miller E. Intracranial Hemorrhage — Is Very Early Rehabilitation Safe? A Narrative Review. Journal of Clinical Medicine. 2024;13(13):3776.
8. Otgontuya D., et al. Associated Factors of Long-Term Functional Outcome and Recovery Pattern After Intracerebral Hemorrhage: A Prospective Population-Based Study. Stroke. 2024.
9. Roesner K., Scheffler B., Kaehler M., et al. Effects of physical therapy modalities. American Heart Association / American Stroke Association 2022 Guideline for the Management of Patients With Spontaneous Intracerebral Hemorrhage.
10. Salvalaggio S., Otgontuya D., et al. Associated Factors of Long-Term Functional Outcome and Recovery Pattern After Intracerebral Hemorrhage: A Prospective Population-Based Study. Stroke. 2024.
11. Wu C.H., Wang K.C., Lin M.T., Otgontuya D., et al. Associated Factors of Long-Term Functional Outcome and Recovery Pattern After Intracerebral Hemorrhage: A Prospective Population-Based Study. Stroke. 2024.

TIBBIYOT
TA'LIMI & INNOVATSIYALARI

2026. № 8

Muharrir: Sherzod Qurbonov

Mas’ul kotib: Surmaniso Mirzaliyeva

Dizayner: Oloviddin Sobir o‘g‘li

© Materiallar ko‘chirib bosilganda “Tibbiyot ta'limi va innovasiyalari” ilmi elektron jurnali manba sifatida ko‘rsatilishi shart. Jurnalda bosilgan material va reklamalardagi dalillarning aniqligiga mualliflar ma’sul. Tahririyat fikri har vaqt ham mualliflar fikriga mos kelamasligi mumkin. Tahririyatga yuborilgan materiallar qaytarilmaydi.

Jurnalga istalgan payt quyidagi rekvizitlar orqali obuna bo‘lishingiz mumkin. Obuna bo‘lgach, @iqtisodiyot_77 telegram sahifamizga to‘lov haqidagi ma’lumotni skrinshot yoki foto shaklida jo‘natishingizni so‘raymiz. Shu asosda har oygi jurnal yangi sonini manzilingizga jo‘natamiz.

Mazkur jurnalda maqolalar chop etish uchun quyidagi havolalarga
maqola, reklama, hikoya va boshqa ijodiy materiallar yuborishingiz mumkin.
Materiallar va reklamalar pullik asosda chop etiladi.
El.Pochta: sq143235@gmail.com
Bot: @munis_sm
Tel.: 97 748 70 03





Google scholar

PubMed MEDLINE
NIH U.S. National Library of Medicine National Institutes of Health
Advancing Health Through Knowledge