Enhanced Recovery After Surgery (ERAS) for Liver Resection Clinical Pathway

Site Applicability

Vancouver General Hospital

Pathway Patient Goals

Inclusion Criteria

Home Discharge Criteria

Instructions

1. Review pathway once per shift for patient care goals and expected outcomes
2. Do not document on this pathway, complete documentation in the Electronic Health Record (Cerner) or paper chart as per policy

Day of Surgery – OR Day	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Capillary Blood Glucose (CBG) taken as per protocol • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory
Bowel/Bladder	• Urine output more than 100 ml per 4 consecutive hours • Catheter secured and pericare/catheter care completed Q shift • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender
Nutrition & Hydration	• Ice chips • Gum chewing (15 minutes TID) • Scheduled Ondansetron 4 mg PO/IV Q8H x 9 doses; **First dose** administered **8 hrs after intra-op dose** (ensure each dose is numerically labelled) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Dressing dry and intact (do not change dressing until POD #3, unless saturated, otherwise outline drainage with a pen and reinforce as needed) • Absence of sanguineous/bilious drainage in HMV • Strip HMV Q1H for 4 hrs, then Q6H PRN • Post-op wash completed (leave pink chlorhexidine skin preparation solution on for 6 hours post-op)
Functional Mobility	• Turned Q2H until fully able to reposition on their own • Ankle exercises every hour when in bed • Patient sat at edge of bed or in chair x 15 minutes • HOB elevated 30 degrees when in bed • ICOUGH protocol followed • Full night sleep achieved • Sequential Compression Deice (SCD) applied • SCD removed no longer than 30 min/shift to assess & perform skin care as per protocol
Teaching & Discharge Planning • Patient is oriented to room/environment • **ERAS Booklet**: patient has booklet at bedside ○ Patient is aware of daily goals starting on page 51	

- Reviewed and reinforced pain management on page 39

Day of Surgery – Post-Op Day 1	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Capillary Blood Glucose (CBG) taken as per protocol • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory
Bowel/Bladder	• Urine output more than 100 ml per 4 consecutive hours • Catheter secured and pericare/catheter care completed Q shift • Night shift to remove Foley catheter tomorrow am at **06:00hr** on POD 2 (**even if epidural in situ**). If Foley not removed at 0600 POD2, provide rationale • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender
Nutrition & Hydration	• **MINOR Liver Resection**: Start first meal as Post Surgical Transition Diet • **MAJOR Liver Resection:** Start first meal as Full Fluids • Patient tolerating Boost 1.5 Tetra BID • Tolerating oral intake • Gum chewing (15 minutes TID) • Scheduled Ondansetron 4 mg PO/IV Q8H x 9 doses (ensure each dose is numerically labelled) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Dressing dry and intact (do not change dressing until POD #3, unless saturated, otherwise outline drainage with a pen and reinforce as needed) • Absence of sanguineous/bilious drainage in HMV • Strip HMV Q6H PRN (if applicable)
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for minimum x 2 (with assistance or independently) • Walked x 1 in room (Minimum 5 meters) (with assistance or independently) • Up to bathroom (with assistance or independently)

	• SCD discontinued after first dose of anticoagulant. Unless contraindicated • SCD removed no longer than 30 min/shift to assess & perform skin care as per protocol

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient is aware of daily goals starting on page 53
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient received teaching re: self administration of LMWH
• Patient has arranged for support person at home post discharge	

Day of Surgery – Post-Op Day 2	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory (if applicable)
Bowel/Bladder	• No issue with first void post Foley removal • Urine output more than 360 ml/12 hours. If Foley in situ, provide rationale • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender
Nutrition & Hydration	• **MINOR Liver Resection**: Advance diet to Diet as Tolerated • **MAJOR Liver Resection:** Advance diet to Post Surgical Transition Diet • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Scheduled Ondansetron 4 mg PO/IV Q8H x 9 doses (ensure each dose is numerically labelled) • Nausea controlled • Patient did NOT vomit during shift • Saline lock IV when drinking ≥ 600 ml/12 hours
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Dressing dry and intact (do not change dressing until POD #3, unless saturated, otherwise outline drainage with a pen and reinforce as needed) • Absence of sanguineous/bilious drainage in HMV • Strip HMV Q6H PRN (if applicable) • Discontinue drain as per order ,based on drainage volume
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • Up in chair for all meals (with assistance or independently) • Walked in hallway x 2 (10 meters/walk) (with assistance or independently) • Up to bathroom (with assistance or independently) • SCD removed no longer than 30 min/shift to assess & perform skin care as per protocol • ICOUGH protocol followed
Teaching & Discharge Planning	

- **ERAS Booklet**: patient has booklet at bedside
  - Patient is aware of daily goals starting on page 55
  - Reviewed and reinforced pain management on page 39
  - Patient is aware of discharge criteria on page 61
- Patient received teaching re: self administration of LMWH
- Patient has arranged for support person at home post discharge
- Patient has a ride home on day of discharge
- Patient met the following discharge criteria
  - Independent with ADLs
  - Pain managed on oral analgesics
  - Tolerating regular diet
  - Passing gas or has had a bowel movement
- Discharge destination confirmed

Day of Surgery – Post-Op Day 3	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory (if applicable)
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • If Foley in situ provide rationale • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• **MINOR Liver Resection**: Diet as Tolerated • **MAJOR Liver Resection:** Advance diet to Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Scheduled Ondansetron 4 mg PO/IV Q8H x 9 doses (ensure each dose is numerically labelled) • Nausea controlled • Patient did NOT vomit during shift • If CVC insitu, discontinue and start peripheral IV access • Saline lock IV when drinking ≥ 600 ml/12 hours
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Dressing changed • Incision dry and left open to air (no dressing) • Incision approximated (no signs of infection) • Remove abdominal staples and apply steri-strips as per MD orders • Strip HMV Q6H PRN (if applicable) • Absence of sanguineous/bilious drainage in HMV
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed • Ankle exercises every hour when in bed • Up in chair for all meals (with assistance or independently) • Walked in hallway x 2 (with assistance or independently) • Up to bathroom (with assistance or independently) • SCD removed no longer than 30 min/shift to assess & perform skin care as per protocol • ICOUGH protocol followed
Teaching & Discharge Planning • **ERAS Booklet**: patient has booklet at bedside	

- Patient is aware of daily goals starting on page 57
- Reviewed and reinforced pain management on page 39
- Patient is aware of discharge criteria on page 61

- Patient self-administering LMWH
- Patient has arranged for support person at home post discharge
- Patient has home & equipment prepared for discharge
- Patient has a ride home on day of discharge
- Patient met the following discharge criteria
  - Independent with ADLs
  - Pain managed on oral analgesics
  - Tolerating regular diet
  - Passing gas or has had a bowel movement
- Discharge destination confirmed

Day of Surgery – Post-Op Day 4	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory (if applicable)
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Nausea controlled • Patient did NOT vomit during shift • Saline lock IV when drinking ≥ 600 ml/12 hours
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Incision approximated (no signs of infection) • Strip HMV Q6H PRN (if applicable) • Remove abdominal staples and apply steri-strips as per MD orders
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for all meals independently • Walked in hallway x 2 independently • Up to bathroom independently

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient is aware of daily goals starting on page 59
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient self-administering LMWH
• Patient has arranged for support person at home post discharge
• Patient has home & equipment prepared for discharge
• Patient has a ride home on day of discharge
• Patient met the following discharge criteria
  ○ Independent with ADLs
  ○ Pain managed on oral analgesics	

  - Tolerating regular diet
  - Passing gas or has had a bowel movement
- Discharge destination confirmed

Day of Surgery – Post-Op Day 5	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol • Epidural site satisfactory (if applicable)
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Incision approximated (no signs of infection) • Remove abdominal staples and apply steri-strips as per MD orders
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for all meals independently • Walked in hallway x 2 independently • Up to bathroom independently

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient reviewed daily goals and discharge information on page 59-64
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient self-administering LMWH
• Patient has arranged for support person at home post discharge
• Patient has home & equipment prepared for discharge
• Patient has a ride home on day of discharge
• Patient met the following discharge criteria
  ○ Independent with ADLs
  ○ Pain managed on oral analgesics
  ○ Tolerating regular diet
  ○ Passing gas or has had a bowel movement	

- Discharge destination confirmed

Day of Surgery – Post-Op Day 6	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Incision approximated (no signs of infection) • Remove abdominal staples and apply steri-strips as per MD orders
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for all meals independently • Walked in hallway x 2 independently • Up to bathroom independently

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient reviewed daily goals and discharge information on page 59-64
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient self-administering LMWH
• Patient has arranged for support person at home post discharge
• Patient has home & equipment prepared for discharge
• Patient has a ride home on day of discharge
• Patient met the following discharge criteria
  ○ Independent with ADLs
  ○ Pain managed on oral analgesics
  ○ Tolerating regular diet
  ○ Passing gas or has had a bowel movement
• Discharge destination confirmed	

Day of Surgery – Post-Op Day 7	
Category	**Expected Outcomes**
Safety	• Beside safety check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Incision approximated (no signs of infection) • Remove abdominal staples and apply steri-strips as per MD orders
Diagnostics	• Bloodwork completed as per order
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for all meals independently • Walked in hallway x 2 independently • Up to bathroom independently

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient reviewed daily goals and discharge information on page 59-64
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient self-administering LMWH
• Patient has arranged for support person at home post discharge
• Patient has home & equipment prepared for discharge
• Patient has a ride home on day of discharge
• Patient met the following discharge criteria
  ○ Independent with ADLs
  ○ Pain managed on oral analgesics
  ○ Tolerating regular diet
  ○ Passing gas or has had a bowel movement	

- Discharge destination confirmed

Day of Surgery – Post-Op Day 8 and Onward	
Category	**Expected Outcomes**
Safety	• Bedside Safety Check
Fall Risk/Care Plan	• Not at risk: reviewed & no concerns • Fall prevention care plan in place • Risk assessed & new fall prevention care plan completed
Cognition	• Alert & Oriented x 3 (person, place, date)
Assessment	• Vital signs and temp within patient's normal limits • Head to toe assessment (within patient's normal limits) • Anxiety level acceptable to patient
Pain Management	• Pain level acceptable to patient • Pain assessment completed as per protocol
Bowel/Bladder	• Urine output more than 360 ml/12 hours. • Flatus passed • Note date of last BM • Abdomen soft, not distended, non-tender • No evidence of urinary tract infection
Nutrition & Hydration	• Diet as Tolerated • Patient tolerating Boost 1.5 Tetra BID • Gum chewing (15 minutes TID) • Nausea controlled • Patient did NOT vomit during shift
Skin, Dressings, Drains	• Braden Risk Assessment for skin integrity • Incision approximated (no signs of infection) • Remove abdominal staples and apply steri-strips as per MD orders
Functional Mobility	• HOB elevated 30 degrees when in bed, unless contraindicated • Ankle exercises every hour when in bed • ICOUGH protocol followed • Up in chair for all meals independently • Walked in hallway x 2 independently • Up to bathroom independently

Teaching & Discharge Planning
• **ERAS Booklet**: patient has booklet at bedside
  ○ Patient reviewed daily goals and discharge information on page 59-64
  ○ Reviewed and reinforced pain management on page 39
  ○ Patient is aware of discharge criteria on page 61
• Patient self-administering LMWH
• Patient has arranged for support person at home post discharge
• Patient has home & equipment prepared for discharge
• Patient has a ride home on day of discharge
• Patient met the following discharge criteria
  ○ Independent with ADLs
  ○ Pain managed on oral analgesics
  ○ Tolerating regular diet
  ○ Passing gas or has had a bowel movement
• Discharge destination confirmed	

Day of Discharge	
Category	**Expected Outcomes**
Discharge	• Discharged, accompanied • Has discharge prescriptions • If script for proton pump inhibitor, RN to review medication in ERAS booklet with patient prior to discharge • Has sharps container & appropriate LMWH teaching sheet • Has post-op instruction sheet • Has follow up information • Has all belongings • Understands when to seek medical attention for complications • Arrangements made for staple removal at post-op day 7 to 10 if applicable • Discharge destination confirmed

Developed By

Effective Date:	
Posted Date:	
Last Revised:	
Last Reviewed:	
Approved By:	
	Endorsed By: **Final Sign Off:**
Owners:	VCH
	Developer Lead(s): • Clinical Nurse Educator, General/Vascular Surgery, OTL-HNS & GI Medicine, VGH