

**Appendix VI Rating system with combination indicators for adhesion assessment**

Indicators	Score	Scoring system
Scope & Appearance	0-4	<b>0</b> No adhesion; <b>1</b> Thin or narrow, easily separable adhesions; <b>2</b> Adhesions limited to a small area; <b>3</b> Thick adhesions dispersed over a large area; <b>4</b> Thick and wide adhesions, adhesions of the organs to the anterior and/or posterior abdominal wall
Area & Strength & Appearance	0-4	Score    Area    Adhesion grading by resistance to lysis 0    None    No significant adhesions 1    ≤ 25%    Thin, narrow, and easily detachable adhesions 2    ≥ 25%, and ≤ 50%    Thick adhesions limited to one area 3    ≥ 50%    Thick and broad adhesions 4    --    Thick and broad adhesions, involving the anterior or posterior abdominal wall, and the viscera
Strength & Appearance	1-4	<b>1</b> adhesion include fibrin deposits, fine thread-like adhesion strands, or slight organ adhesions that can be lysed with blunt instruments; <b>2</b> also includes adhesion strands that can be lysed with blunt instruments, but partly also ones that are only lysable with sharp instruments, with incipient fragile vascularization; <b>3</b> adhesions include clearly vascularized, strong adhesion strands which are only lysable with sharp instruments; <b>4</b> adhesions are firm, extensive organ adhesions, which are only lysable with sharp instruments and for which surgical treatment for organ damage is almost unavoidable.
Strength & Appearance	1-4	<b>1</b> Filmly adhesion, easy to separate by blunt dissection; <b>2</b> Stronger adhesion with blunt dissection possible, but partly sharp dissection necessary and with beginning of vascularization; <b>3</b> Strong adhesion with lysis possible only by sharp dissection and clear vascularization; <b>4</b> Very strong adhesion with lysis possible only by sharp dissection and with organs strongly attached so that their damage is hardly preventable
Strength & Appearance	1-4	<b>1</b> Filmly adhesion which can be easily separated by blunt dissection; <b>2</b> Hard adhesion which can be separated by blunt dissection and partial sharp dissection at the start of vascularization; <b>3</b> Strong vascularized adhesion which can be separated by only sharp dissection; <b>4</b> Very strong adhesion which can be separated only by sharp dissection causing damage on organs.
Appearance & Scope	1-4	<b>1</b> Filmly, avascular or no adhesion; <b>2</b> Bowel adhesion; <b>3</b> One adhesion region of liver or spleen with or without bowel; <b>4</b> More than two adhesion regions of liver or spleen with or without bowel
Strength & Appearance	1-2	A score of <b>1</b> was given to a closure technique that had either no associated adhesions or mild adhesions (viscus could be freed by gentle blunt dissection); A score of <b>2</b> was given to a closure technique that had moderate adhesions (viscus could be freed by aggressive blunt dissection) or severe adhesions (adhesions requiring sharp dissection for release and/or the presence of abscesses)
Strength &	0-5	<b>0</b> no adhesions observed; <b>1</b> loose adhesion requiring blunt dissection only; <b>2</b> firm adhesion requiring sharp dissection without extensive vascularity; <b>3</b> firm adhesion

Appearance & Scope			requiring sharp dissection with extensive vascularity; <b>4</b> firm adhesion requiring sharp dissection with extensive fibrotic ingrowth and extensive vascularity; <b>5</b> grade 4 with a firm attachment to visceral organs (bowel, liver, spleen).				
Strength & Area & Scope	0-12		<b>1</b> Adhesion scope: only involving the omentum, 1 point; another involving the small intestine, 2 points; another involving the liver, spleen, and other areas, 1 point, 3 points; another involving the liver, spleen, and other areas, 2 or more points, 4 points. <b>2</b> adhesion strength: loose adhesions, easy to separate, no bleeding, 1 point; adhesions slightly dense, need to pull after separation, separation surface with bleeding, 2 points; adhesions dense, need more force to pull after separation, 3 points; adhesions dense, after more force to pull still can not be separated, 4 points. <b>3</b> Adhesive area: less than 25% of the mesh area, 1 point; 25% ~ 50%, 2 points; 50% ~ 75%, 3 points; > 75%, 4 points. The total score is 12 points, no adhesion is 0 points.				
Area & Appearance	0-12	Parameter	Score				
		0	1	2	3	4	
		Adhesion					
		area (%)	No adhesions	1-25% de mesh	26-50% de mesh	51-75% de mesh	76-100%mesh
			covered by adhesion covered by adhesion covered by adhesion covered by adhesion				
		Adhesion					
		vascularization	No	yes	-	-	-
		Adhesion size	No	< 5 mm	5-10 mm	11-15 mm	> 15 mm
Area & Strength & Appearance	0-12	Score	Extent (%)	Tenacity	Type		
		0, 0	None	None			
		1, < 25	Easily lysed		Filmy, no vessels		
		2, 25-50	Lysed with traction		Opaque, no vessels		
		3, 50-75	Required sharp dissection		Opaque, small vessels		
		4, > 75			Opaque, large vessels		
Area & Appearance & strength	0-12	Adhesion score	Adhesion area	Adhesion type	Tenacity		
		0	None	None	None		
		1	<25%	Filmy, transparent, avascular	Adhesion falls apart		
		2	<50%	Opaque, translucent, avascular	Adhesion lysed with traction		
		3	<75%	Opaque, capillaries present	Adhesion requiring sharp dissection		

			4	<100%	Opaque, larger vessels present			/
Appearance & strength	1-12	Score	1	2	3			
		Width of adhesions in mm	<2	2–10	>10			
		Thickness in mm	<1	1–3	>3			
		Subjective strength	+	++	+++			
		Amount of visible strands	0–2	3–4	>4			
A total of 1–4 points is regarded as a mild grade of adhesion, 5–8 points as moderate, and 9–12 points as severe.								
Area & Appearance & strength	0-11	The total adhesion score (range, 0–11) based on the extent (0 = no adhesions,1 = 1–25 % involvement of the mesh surface,2 = 26–50 % involvement, 3 = 51–75 % involvement, 4 = 76–100 % involvement), type (0 = no adhesions,1 = Filmy, transparent, avascular, 2 = Opaque, translucent, avascular, 3 = Opaque, capillaries present, 4 = Opaque, large vessels present), and tenacity of adhesions (0 = no adhesions,1 = adhesions fall apart easily, 2 = traction required, 3 = sharp dissection required						
Area & Appearance & strength	0-11	The total adhesion score (range, 0–11) based on the extent (0 = no adhesions,1 = 1–25 % involvement of the mesh surface,2 = 26–50 % involvement, 3 = 51–75 % involvement, 4 = 76–100 % involvement), type (0 = no adhesions,1 =filmy, 2 = dense, 3 = capillaries present, 4 = larger vessels), and tenacity of adhesions (0 = no adhesions,1 = adhesions fall apart easily, 2 = traction required, 3 = sharp dissection required)						
Area & Appearance & strength	1-10	The Hoffmann scoring scheme covers three different aspects: 1) the area of adhesion formation, graded 0 to 4 (0; no adhesions, 1; cecum to bowl adhesion, 2; cecum to sidewall adhesion over less than 25% of the abraded surface area, 3; cecum to sidewall adhesion between 25% and 50% of the abraded surface area, 4; cecum to sidewall adhesion over 50% of the abraded surface area); 2) the strength, graded 0 to 3 (0; no adhesion, 1; gentle traction required to break adhesion, 2; traction required to break adhesion); 3) the extent, also graded 0 to 3 (0; no adhesion, 1; filmy adhesion, 2; vascularized adhesion,3; opaque or cohesive adhesion). These three subscores were summed for a total Hoffmann adhesion score.						
Area & Appearance & strength	0-9	Score	Extent	Quality	Required dissection			
		0	No adhesions	No adhesions	No adhesions			
		1	<25 % involvement of the surface	Filmy	Adhesions fall apart easily			
		2	26–50 % involvement	Vascularized/dense	Traction required/blunt dissection			
		3	>50 % involvement	Fibrotic	Sharp dissection required			
The Total Adhesion Score (TAS), ranging from 0 to 9 and acquired by adding relative scores from extent (0–3), quality (0 3), and required dissection (0–3) of adhesions was calculated for each mesh.								
Strength &	1-64	Adhesion	Area 0≤1/3	Area 1/3≤2/3	Area 2/3–3/3			

Area			Type 1, filmy	1	2	4	
			Type 2, easily separable	4	8	16	
			Type 3, requiring sharp dissection	16	32	64	
Strength	&	No	a) loose, transparent, and easily dissected;				
Appearance			b) firm, whitish in color, and more difficult to dissect;				
			c) integrated within the prosthesis/visceral peritoneum interface and difficult to dissect away from the biomaterial and intestinal serosa				
Strength	&	No	loose (transparent, poorly vascularized filmy adhesions that were easily dissected);				
Appearance			firm (denser adhesions, whitish in color and difficult to dissect);				
			integrated (requiring sharp dissection to pull away from the mesh, occasionally producing serosal damage to the organ involved).				
Appearance	&	No	Adhesion characteristics, including the location, shape (band or string), anatomical structures involved, and appearance of the mesh surface was noted.				
Scope							

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