Table S1. Types of immunodeficiency disorders among participants receiving an additional heterologous (viral vector) COVID-19 vaccine.

Study	Diagnoses															
	AIH	**Arthritis**	**CTD**	**HTX**	**HTX+ MM**	**IgG4-related disease**	**KTX**	**LiTX**	**LiTX+KTX**	**LuTX**	**MM**	**MS**	**RCC**	**Vasculitis**	**Breast cancer**	**Pemphigus vulgaris**
Bonelli 2022	0 (0)	11 (40.7)	7 (25.9)	0 (0)	0 (0)	2 (7.4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11.1)	0 (0)	4 (14.8)	0 (0)	0 (0)
Reindl 2022	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	98 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Mrak 2022	0 (0)	0 (0)	1 (4.5)	10 (45.5)	0 (0)	0 (0)	0 (0)	3 (13.6)	0 (0)	6 (27.3)	1 (4.5)	0 (0)	1 (4.5)	0 (0)	0 (0)	0 (0)
Kho 2023	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	73 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	**0**	**11**	**8**	**10**	**0**	**2**	**171**	**3**	**0**	**6**	**1**	**3**	**1**	**4**	**0**	**0**

Abbreviations: AIH, autoimmune hepatitis; CTD, connective tissue disease; HTX, heart transplant; HTX+MM, heart transplant and multiple myeloma; KTX, kidney transplant; LiTX= liver transplant, LiTX+KTX, liver transplant and kidney transplant; LuTX= lung transplant; MM, multiple myeloma; MS, multiple sclerosis; RCC, renal cell carcinoma.

Table S2. Types of immunodeficiency disorders among participants receiving an additional homologous (mRNA) COVID-19 vaccine.

Study	Diagnoses															
	AIH	**Arthritis**	**CTD**	**HTX**	**HTX+ MM**	**IgG4-related disease**	**KTX**	**LiTX**	**LiTX+KTX**	**LuTX**	**MM**	**MS**	**RCC**	**Vasculitis**	**Breast cancer**	**Pemphigus vulgaris**
Bonelli 2022	0 (0)	10 (35.7)	9 (32.1)	0 (0)	0 (0)	2 (7.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (10.7)	0 (0)	4 (14.3)	0 (0)	0 (0)
Reindl 2022	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	99 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Mrak 2023	1 (4.2)	0 (0)	1 (4.2)	8 (33.3)	1 (4.2)	0 (0)	0 (0)	2 (8.3)	1 (4.2)	5 (20.8)	1 (4.2)	2 (8.3)	0 (0)	0 (0)	1 (4.2)	1 (4.2)
Kho 2023	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	73 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	**1**	**10**	**10**	**8**	**1**	**2**	**172**	**2**	**1**	**5**	**1**	**5**	**0**	**4**	**1**	**1**

Abbreviations: AIH, autoimmune hepatitis; CTD, connective tissue disease; HTX, heart transplant; HTX+MM, heart transplant and multiple myeloma; KTX, kidney transplant; LiTX= liver transplant, LiTX+KTX, liver transplant and kidney transplant; LuTX= lung transplant; MM, multiple myeloma; MS, multiple sclerosis; RCC, renal cell carcinoma.

Table S3. Risk of bias of the included studies, assessed using Cochrane RoB-2 tool.

Study	Randomization process	Deviations from the intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall risk of bias
Bonelli 2022	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Reindl 2022	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Mrak 2022	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Kho 2023	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk

Table S4. Certainty of evidence of the outcomes of interests, assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.

Outcome	Initial certainty of evidence	Domain								Overall certainty of evidence
		Lower if					Higher if			
		Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Large effect size	Dose-response gradient	All plausible residual confounding	
Anti-S IgG seropositivity rate	High (RCTs)	0 (no evidence)	-1 (I^2 = 63%)	0 (no evidence)	-1 (95% CI overlapped the null effect)	-1 (no quantitative results of publication bias)	0 (no evidence)	0 (no evidence)	0 (no evidence)	Very low
SARS-CoV-2-specific T-cell immune response rate			0 (I^2 = 0%)		-1 (95% CI overlapped the null effect)					Low
Pain at injection site			0 (I^2 = 0%)		0 (no evidence)					Moderate
Headache			0 (I^2 = 0%)		0 (no evidence)					Moderate
Fatigue			0 (I^2 = 49%)		0 (no evidence)					Moderate
Myalgia			0 (I^2 = 38%)		0 (no evidence)					Moderate
Arthralgia			0 (I^2 = 0%)		0 (no evidence)					Moderate